Innovator 11

Manual classiX B Operations

Working with Innovator

www.mid.de

Manual classiX B Operations–Innovator 11 (version 11.2)–Edition July 2010

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Contents

Part B Working with Innovator B-1

B-1 Using the Model Browser B-3

B-1.1 Structure of the Model Browser B-4

B-1.2 Viewing the Model Structure in the Model Tree B-5

B-1.2.1 Using Information in the Model Tree B-5

B-1.2.2 Opening, Closing and Releasing Subtrees B-7

B-1.3 Using the List of Model Elements B-8

B-1.3.1 Using Information in the Columns B-8

B-1.3.2 Changing the Order of Columns in the List of Model Elements or Result Region B-9

B-1.3.3 Changing the Order of Entries B-10

B-1.4 Collecting as Many Elements as Required in the Result Region B-11

B-1.5 Navigating in the Model Browser B-13

B-1.5.1 Selecting an Entry in the Model Tree B-13

B-1.5.2 Navigating Between Packages B-14

B-1.5.3 Finding an Element's Package B-15

B-2 The Basics for Working with Innovator B-17

B-2.1 Information about Elements in Innovator Models B-18

B-2.1.1 Disambiguation: Element Types, Model Elements, Relationships etc. B-19

B-2.1.2 Logical and Graphic Existences of Model Elements B-22

B-2.1.3 Displaying Relationships to Model Elements from Other Diagrams (Maintenance Status) B-24

B-2.1.4 Reserving Elements for Editing (Locking) B-28

B-2.2 Creating and Changing Model Elements B-33

B-2.2.1 Enabling Creating with Dialog Boxes B-34

B-2.2.2 Creating and Opening Diagrams B-34

B-2.2.3 Working with Hierarchical Diagrams B-35

B-2.2.4 Creating Model Elements B-37

B-2.2.5 Selecting Elements B-40

B-2.2.6 Granting Access Rights to Elements B-41

B-2.2.7 Creating and Changing Relationships B-42

B-2.2.8 Copying Elements B-45

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B-2.3 Changing Name and Packages of Elements ... B-49
B-2.3.1 Changing Names, Relationships and Declarations ... B-49
B-2.3.2 Moving Elements in Another Package ... B-53
B-2.3.3 Assigning Elements to Reference Packages ... B-54
B-2.4 Wrapping Names of Elements ... B-55
B-2.4.1 Learning Wrapping Rules for Element Names in Models ... B-55
B-2.4.2 Using Wrapping Lists for Targeted Wrapping ... B-58
B-2.5 Removing and Deleting Elements ... B-61
B-2.5.1 Using Deletion Control ... B-62
B-2.5.2 Removing Elements ... B-63
B-2.5.3 Deleting Elements ... B-64
B-2.6 Reducing File Path Components Using Namespaces ... B-64
B-2.6.1 Activating and Deactivating the Use of Namespaces ... B-66
B-2.6.2 Differentiating between File Paths ... B-67
B-2.6.3 Viewing Path Components in References ... B-70
B-2.6.4 Setting Requirements for Uniqueness of Names and Path Components ... B-71
B-2.6.5 Defining Subtrees ... B-72
B-2.6.6 Extending and Limiting Namespaces ... B-72
B-2.6.7 Using Standard Dialog Boxes for Selecting Elements ... B-74

B-3 Searching for Information ... B-81
B-3.1 Displaying Information ... B-81
B-3.2 Searching for Elements ... B-82
B-3.2.1 Starting the Search Function ... B-83
B-3.2.2 Setting the Search Area ... B-84
B-3.2.3 Formulating Query Components ... B-86
B-3.2.4 Combining or Attaching Query Components ... B-87
B-3.2.5 Implementing the Query, Correcting Query Components ... B-89
B-3.2.6 Transferring Query Results in the Result Area ... B-90
B-3.2.7 Storing and Reusing Queries ... B-91
B-3.2.8 Search Function Query Components ... B-92
B-3.3 Searching for Strings using Text Samples ... B-95

B-4 Working in Diagrams or Tables ... B-99
B-4.1 Influencing how Diagrams or Tables are Displayed ... B-100
B-4.1.1 Enlarging and Downsizing Diagrams (Zoom) ... B-100
B-4.1.2 Showing and Hiding Margins ... B-102
B-4.1.3 Setting Minimum Font Size in the Diagram ... B-103
B-4.1.4 Making Settings for the Print Layout ... B-103

B-4.2 Navigating to Model Elements in the Diagram B-104
B-4.3 Working with a Diagram's Model Elements B-105
B-4.3.1 Selecting Model Elements B-105
B-4.3.2 Positioning Model Elements B-107
B-4.3.3 Changing Model Element Sizes B-114
B-4.3.4 Jumping to Selected Model Elements in the Model Browser B-116
B-4.4 Working with Tables B-118
B-4.4.1 Creating Fixed or Any Values B-118
B-4.4.2 Selecting Cells, Lines and Columns B-119
B-4.4.3 Inserting Rows and Columns B-120
B-4.4.4 Changing Column Titles and Cell Contents B-121
B-4.4.5 Moving Lines and Columns B-122
B-4.4.6 Deleting Rows and Columns B-123

B-5 Using the Class Browser B-125
B-5.1 Opening Class Browsers B-125
B-5.2 Using the Class Browser B-126
B-5.2.1 Editing Classes in the Class Browser B-127
B-5.2.2 Editing Attributes and Methods in the Class Browser B-129

B-6 Using Model References B-133
B-6.1 Model-Internal References B-133
B-6.2 Model-External References B-134

B-7 Exchanging Messages B-139
B-7.1 Receiving Messages B-139
B-7.2 Sending Messages B-140

Index B-145

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Part B Working with Innovator

Each of these Innovator editions–which can also be supplemented by additional modules, such as the Nassi-Shneiderman editor, reverse engineering etc.–come with specific functions for quickly and consistently creating and maintaining models of any size.

There are always similar or the same concepts at the heart of these editions, even though the requirements between them can vary a lot: they create elements, display them in various contexts, link them to each other etc.

The following chapter will outline Innovator functions which are largely independent from the Innovator edition used. You will learn how to:

- Structure the model and navigate between elements in the model browser (see chapter B-1, "Using the Model Browser", page B-3)
- Differentiate between elements and work with them (see chapter B-2, "The Basics for Working with Innovator", page B-17)
- Gather information about model elements and use the search function (see chapter B-3, "Searching for Information", page B-81)
- Work with diagrams and tables (see chapter B-4, page B-99)
- Use classes in the class browser (see chapter B-5, page B-125)
- Use references between elements to navigate or structurally connect these with each other (see chapter B-6, "Using Model References", page B-133)
- Work with the mailing system in Innovator (see chapter B-7, "Exchanging Messages", page B-139)

You can select whether names need to be unique in the entire model or not when working with Innovator Object or Innovator Business editions. You can find all information about namespaces in chapter B-2.6, "Reducing File Path Components Using Namespaces", page B-64.

Read about versioning model elements in the Manual Version Management.

Read about comparing model elements in the Diff Utility Manual.

Alternative Operation

There is often more than one way to execute menu items.

You can configure menu items for the menu bar, the context-sensitive pop-up menu and the toolbar. You can also use shortcut keys.

Only the menu items will normally be given in the Innovator documentation. However, particularly with regard to standard functions, other alternative operations are often more productive.

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- **Shortcut keys**

Switching from keyboard to mouse takes up valuable time. There are, therefore, shortcut keys available for standard functions (e.g. [Alt]+[Enter] for the `Element|Edit/Properties` dialog box). You can find the shortcut keys which are available to you in the menu after the respective menu item.

- **Toolbars**

You can customize the left, top and right toolbars by assigning a toolbar to the menu items which have been assigned an icon in the model browser and the editors using the `Extras>Customize>Toolbars...` menu item.

You can display icons for create templates in the left-hand toolbar in the model browser. You can display verifications and engineering actions in the top toolbar.

To display create templates for model elements as icons, select `Model>Configuration><Element Type>>Diagram Properties`, `<Element Templates>...` or `Diagram Templates...`
To display verifications or engineering actions as icons, select `Model>Configuration>Verifications` or `Engineering Actions` and activate the `Show in Model Browser Toolbars` check box.

- **Menu bars and pop-up menus**

You can select menu items which should be displayed in the menu bar or in the pop-up menu with `Extras>Customize>Menu` or `Popup Menu` from the respective menu item structure from the model browser, diagram or table editor. Menu items which are selected but are not applicable are not grayed out in the pop-up menu; they are not even displayed. Model configuration of dependent menu items, such as e.g. verifications, are selected as groups using the respective submenu.

B-1 Using the Model Browser

If you open a model in Innovator, a main window appears first and then the model browser. This is the central window which you will use to carry out many of the basic tasks associated with modeling:

- You can manage the structure of your model using packages (see page A-35)
- You can navigate to the various elements of your model (see page B-13)
- You can use model-internal or -external references for navigating or for structured connection of two models (see page B-133)
- You can carry out the most important basic functions (e.g. creating, deleting, moving, opening, renaming elements, see page B-17)

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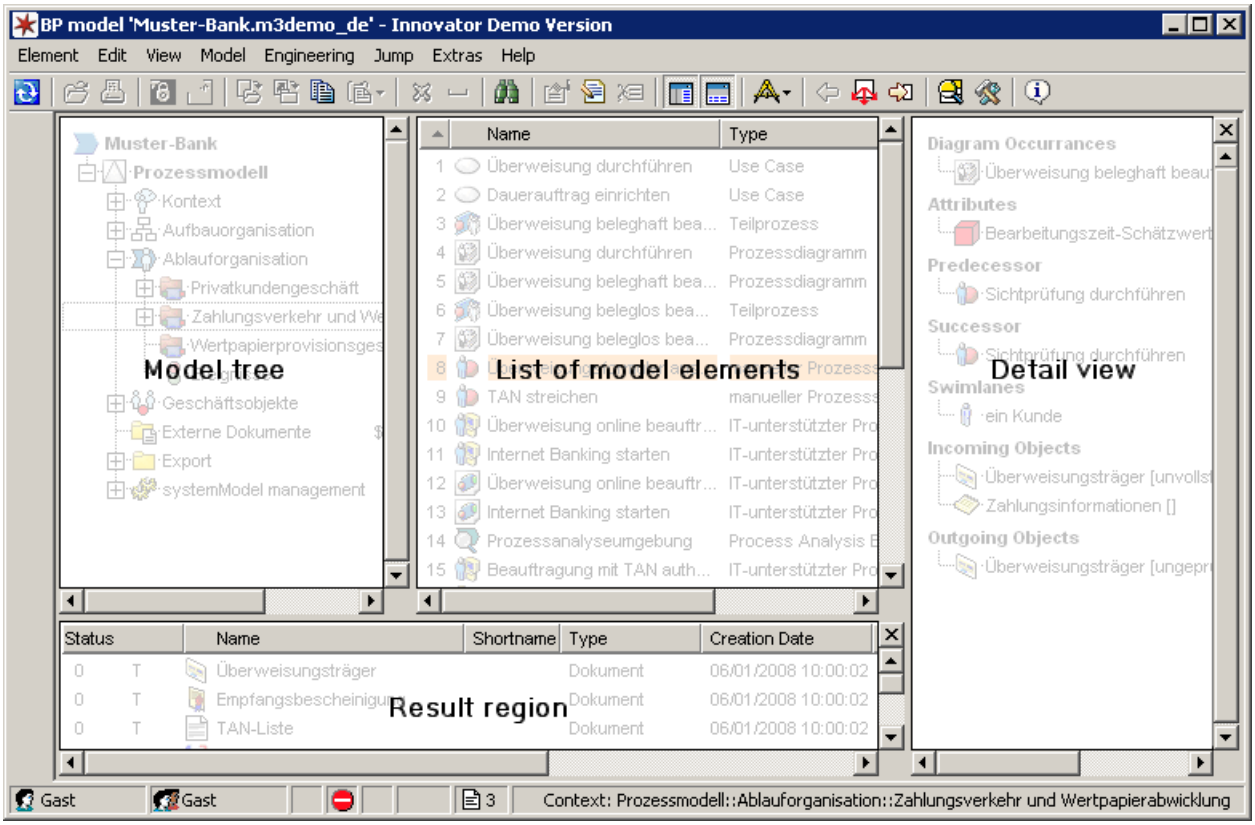
B-1.1 Structure of the Model Browser

The model browser is divided into various areas.



Model Tree

The model's structures are shown in the left-hand area of the model browser, the model tree. You use so-called packages here which you–depending on your model's requirements–hierarchically structure (see page B-5).

You can use hierarchical diagrams in some editions (e.g. SA diagrams in the Innovator Function edition, activity diagrams in the Innovator Business edition). As these diagrams also represent a part of your model's structure, they are shown in the model tree as well.

List of Model Elements

If you select an entry (package or diagram) in the model tree, all elements which are included in it are shown in the center area; the list of model elements (see page B-8).

Various information about the elements are shown in the columns of lists. You can change the order of the columns and hide columns (see page B-9).

Detail View

You can assign further elements to some elements whilst working on the model (e.g. attributes of a class, refinement of a data dictionary entry). If you select one of these elements in the list of model elements or in the result region, the corresponding information is shown in the detail view.

You can display and hide the detail view separately in the `View` menu or with the corresponding icon.

Result Region

You can only view the contents of precisely one package or one hierarchical diagram in the list of model elements. However, you need a collection of elements for some tasks, regardless of which package they are in (e.g. searching for elements with certain properties).

You can collect, select and, as necessary, use as many elements of a model as required in the result region (see page B-11). Information about a selected element is shown in the detail view.

Information about the element is also shown in various columns in the result region. As with the list of model elements, you can also change the order of the columns and how they are shown (see page B-9).

You can display and hide the result region separately in the `View` menu or with the corresponding icon. You can set the result region so that it is automatically displayed as soon as an element is assigned in the dialog box `Extras/Options` using the check box `Pop result region automatically`.

B-1.2 Viewing the Model Structure in the Model Tree

All your model's packages and hierarchical diagrams are shown in the model tree. This means you can view your model's tree structure at a glance.

Other Information

- chapter A-3.1, "Working with Packages", page A-36
- chapter A-3.2, "Modeling Dependencies Between Packages in Package Diagrams", page A-45
- chapter A-3.4, "Making Specifications to Packages", page A-60
- chapter B-2.2.3, "Working with Hierarchical Diagrams", page B-35
- chapter B-1.3.3, "Changing the Order of Entries", page B-10

B-1.2.1 Using Information in the Model Tree

You can represent hierarchies in Innovator using packages and some diagrams. You can manage tree structures which occur in this way in the model tree.

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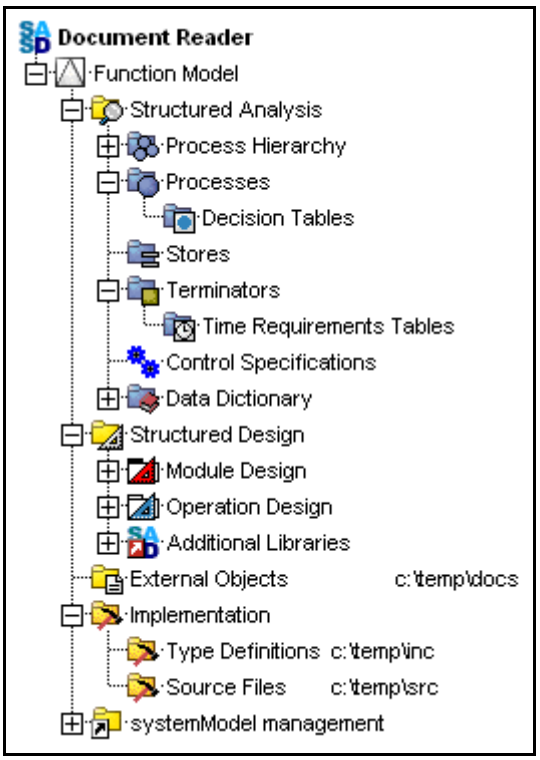


Structure

You can get the following information from the model tree:

- **Root package:** the top-most package of the tree structure is the root package. It represents the entire model. All of the model's packages are stored in the root package. You cannot rename or delete the root package in the model browser. You need to rename the model to be able to rename the root package. The model name can only be changed by the administrator in the administration program.

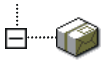
  A special element is automatically created in the root package when a model is created: model specification. It has the same name as the model. You can store information about the model on this element (e.g. specifications, labels etc.). It is also not possible to rename or delete the model specification in the model browser. The model specification can only be changed by the administrator.

Note

The model specification is not available as a package, but displays its own element type. This means that you can define various specifications for the model specification and use these independently from the package's specification types (see chapter C-2.4.2, "Creating and Modifying Specification Types for Elements", page C-27).

- **Subtrees:** As many packages and hierarchical diagrams as required can be stored in the root package–as long as it methodically makes sense. Each of these elements, in turn, can be assigned sons. Each package or hierarchical diagram which contains a son therefore represents the root of a subtree. If an element contains children, a '+' or '-' sign is displayed in front of the element name. By clicking on these signs you can expand or collapse the subtree of the element.

The element contains children. However, the subtree is currently collapsed and not visible.



The element contains children. The subtree is currently expanded and all children are displayed.

The element does not contain any children. It represents the end of the subtree.

- **Package type:** as well as their name, packages have a property–the so-called stereotype value. Each stereotype value can be associated with an icon (see page A-78). This icon is displayed before the package name.

B-1.2.2 Opening, Closing and Releasing Subtrees

You can open and close the subtree of each package in the model tree. However, this is only possible if the package contains son packages, i.e. has either a '+' or a '-' symbol before its name.

You can also set the model tree in such a way that only a certain subtree should be shown.

How to proceed

To open a subtree, there needs to be a '+' symbol before the package's name:

» Click on the '+' symbol.
The package's subtree is shown.

How to proceed

To hide a subtree, there needs to be a '-' symbol before the package's name:

» Click on the '-' symbol.
The package's subtree is hidden.

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How to proceed

To only display the subtree of a certain package in the model tree:

» Select the package whose subtree you want to release.

» Select `View>Hide Higher Levels`.
The selected package is shown as the root package in the model tree. The arrow pointing upwards above the package indicate that the tree displayed is only a part of the model.

» To show the entire model again, select the root package of the subtree currently being displayed and select `View>Show Higher Levels`.

or

» Double-click on the arrow.
The entire model is shown again.

B-1.3 Using the List of Model Elements

If you select a package or diagram in the model tree, all elements which are included in it are shown in the list of model elements. In a package, these are the elements (model elements, diagrams, tables etc.) which are assigned to the package (see page B-53), as well as their son packages. For a hierarchical diagram, these are its refinement diagrams, as well as model elements which are shown in the diagram.

B-1.3.1 Using Information in the Columns

A multitude of information is stored for each element. You can view the following information directly in the model browser using the list of model elements:

- **Number:** all of a package's elements are serially numbered. The elements are also stored in the repository in the given order. If this is about the elements displayed in a package, the order of numbers corresponds with those shown in the model tree.
- **Type:** element type of element
- **Name:** name of element
- **Shortname:** if an element can have a shortname this will be shown here.
- **Path component:** Each element exists precisely once in a model. The package which it is e.g. displayed in is the owning package. The path component which is shown in this column is the path component of the owning package. The element can also be referenced with as many packages as required (reference packages).
- **Creation time:** date which the element was created on

- **Modification of time:** date which the element was last modified on
- **Status:** you can read various information in this column:

Display	Meaning
0 to 999	Current generation (version) of the element
R or empty	R: The element in this package is only a reference; the actual element is stored in another package (the package is a reference package). (empty): The element is stored in the current package–the package is the owning package. (see section "Category of Usage of Packages", page A-60)
L, - or (empty)	L: The element is locked by you. -: The element is locked by another user. (empty): The element is unlocked. (see chapter B-2.1.4, "Reserving Elements for Editing (Locking)", page B-28)
A or (empty)	A: You always have access rights to the element (if you lock it, you can modify it). (empty): You do not have access. (see chapter A-1.2.6, "Assigning Privileges and Element Rights to User Groups", page A-16)
T or (empty)	T: Text is stored about the element. (empty): No text is stored for the element yet. (see chapter C-2, "Specifying Elements", page C-9)
* or (empty) (only Innovator Object)	*: The element (classes or components) has one declaration in the primary language. (empty): The element has one or more project languages, however, these are not in the primary language.
r or (empty) (only Innovator Object and Innovator Business)	r: The components were reserved by a user so that they cannot be exported more than once as a source text from the model. (empty): The component is not reserved.
B, O, D, F, R, * or empty	B: The element contains a reference to an element in a Business model. O: The element contains a reference to an element in an Object model. D: The element contains a reference to an element in a Data model. F: The element contains a reference to an element in a Function model. R: The element contains a reference to an element in a Report model. *: The element contains one or more references to other models. (empty): The element contains a reference to an element in another model. (see chapter B-6, "Using Model References", page B-133)

B-1.3.2 Changing the Order of Columns in the List of Model Elements or Result Region

You can change the order of columns in the list of model elements or result region. You can also hide as many columns as you want.

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How to proceed

To change the order of the columns:

» In the model browser, select `Extras>Options...`.
The dialog box of the same name appears. All column titles of the list of model elements are listed in the list box `Table configuration`.

» Set whether you want to change the columns of the list of model elements or those of the result region in the group box `Table configuration`.

» In the list box `Table configuration`, select the column's entry whose position you want to change and move it to the correct position using `[Up]` or `[Down]`.

» Select the column's entry and activate the check box `Hide` to hide the column.

» Click on `[Apply]` and close the dialog box with `[OK]`.
The order of the columns is adapted accordingly.

B-1.3.3 Changing the Order of Entries

The entries in the list of model elements are arranged in the order in which they were created as standard. You can change the order of entries. The following options can be used for this.

- You can **sort** the entries according to specific columns. You can sort each column apart from according to the status.
- You can enter any **order**. You can use this procedure to influence the order of the packages, how they are displayed in the model tree. Elements are also correspondingly taken into consideration in the model documentation.

Note **If you only sort the entries, each entry keeps its number in the repository. If, however, you change the order, in doing so, you also change the numbering.**

How to proceed

To sort the entries in the list of model elements or result region:

» If necessary, role the desired column so it can be seen in the window.

» Click on the column heading of the relevant column.
The entries are sorted.

» To reverse the sort order, click on the column head again.

How to proceed

To arrange the entries in any order:

» Lock the package which contains the entries.

» If necessary, click on the column head of the column which contains the numbered entries.
The entries are sorted according to their position in the repository.

» In the list of model elements, click on the entry whose position you want to change and drag it to the correct position keeping the mouse button pressed.
The order of the entries and their numbering are adapted. When you have moved a package or a hierarchical diagram, the order is also changed in the model tree.

B-1.4 Collecting as Many Elements as Required in the Result Region

You can only view the contents of precisely one package or one hierarchical diagram in the list of model elements. However, you need a collection of elements for some tasks, regardless of which package they are in (e.g. searching for elements with certain properties).

You can display, sort, select and, as necessary, use as many elements of a model collected as required in the result region.

You can transfer elements in the result region in the following ways:

- Manually using the menu or using drag-and-drop (see page B-12)
- Using the search function (see page B-81)

You can sort the entries according to columns in the result region.

Note

The result region is automatically displayed in the model browser under `Extras>Options...` as soon as an element is assigned.

Other Information

- chapter B-1.3.2, "Changing the Order of Columns in the List of Model Elements or Result Region", page B-9
- chapter B-1.3.3, "Changing the Order of Entries", page B-10
- chapter B-1.5.3, "Finding an Element's Package", page B-15

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Transferring Elements in the Result Region

You can use elements which are displayed in the model browser's result region in exactly the same way as in the list of model elements: You can lock, rename, delete etc. them. In this chapter you will learn how to manually transfer elements in the result region. You can read how to get hits from the search function in the result region in chapter B-3, page B-81.

You can transfer the following set of elements in the result region:

- Selected elements
- The contents of a package
- The contents of a package and all of its son packages

Read how to select elements in chapter B-2.2.5, page B-40.

How to proceed

To manually transfer elements in the result region:

» Select the package in the model tree with the elements which you want to transfer in the result region.

» Select the desired element/s.

» Select `Edit>Result Region>Add Selection`.

or

» Add the selected element to the result region using drag-and-drop.
The elements only appear additionally in the result region.

» Repeat this for all packages which contain the necessary elements.

How to proceed

To transfer all of a package's elements in the result region:

» Select the package in the model tree with the elements which you want to transfer in the result region.

» Select `Edit>Result Region>Add Content`.
All of the package's elements (incl. son packages) only appear additionally in the result region.

» Repeat this for all packages which contain the necessary elements.

How to proceed

To transfer all of a package's elements as well those of its son packages in the result region:

» Select the package in the model tree with the elements which you want to transfer in the result region.

» Select `Edit>Result Region>Add Content Recursively`.
All of the package's elements, as well as all the elements in its son packages only appear additionally in the result region.

» Repeat this for all packages which contain the necessary elements.

Deleting Elements from the Result Region

You can manually remove elements which are shown in the result region.

How to proceed

To remove an element from the result region:

» Select the element/s in the result region which you want to remove and select `Edit>Result Region>Remove Selection`.
The elements are no longer displayed in the result region.

B-1.5 Navigating in the Model Browser

Only one section of the model can be shown on the screen at one given time. You can navigate through the model's subtrees to be able to view the desired elements in various ways:

- Use the incremental search to quickly select a package or diagram.
- Change between the packages in a higher or subordinate level in the model tree.
- You can change from an element–e.g. in the result region or in detail view–to an element's owning package and, in doing so, see the element's context.

Other Information

- chapter B-1.2, "Viewing the Model Structure in the Model Tree", page B-5
- chapter B-3, "Searching for Information", page B-81

B-1.5.1 Selecting an Entry in the Model Tree

You can use an incremental search to quickly search for a certain entry (node) in all trees which are shown in the Innovator, e.g. in the repository tree, in the model tree and in the overview tree of the documentation. The tree behaves in exactly the way as in Windows Explorer.

This function is also available to you in the list of model elements and in the result region.

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How to proceed

To select a certain entry in the model tree:

» Enter the character and, if necessary, the following character in the string (this must be done within the space of a second) which the element which you want to select begins with.
The first entry which best matches your entry in the part of the model tree shown is selected.

» If more than one entry begins with the same character order, repeat the entry.

B-1.5.2 Navigating Between Packages

If your model is extremely comprehensive, it is not possible for all packages to be shown at the same time in the model tree. You can also use the model tree's scroll bar to roll the desired package so that it can be seen on the screen. However, you can also use keys to switch adjacent packages.

The following functions are available:

- Switching to an adjacent package on the same hierarchy level (above or below)
- Switching to the first subordinate package
- Switching to the parent package

Note **Editions which permit hierarchical diagrams treat these as packages in the model tree.**

Looking Through the Model

In addition to the scroll bar, you can also use the keys to look through the model tree.

How to proceed

To switch to an adjacent entry in the model tree:

» Select a package in the model tree and press the [Up] or [Down] arrow keys.

How to proceed

To be able to see another image window in the model tree:

» Use the scroll bar to roll the desired section so it can be seen on the screen.
or

» Press the [Page Up] or [Page Down] keys.

How to proceed

To switch to an adjacent previous package on the same hierarchy level:

» Press the key combination [Alt]+[Up] arrow key.
The package on the same hierarchy level which is above is selected.

How to proceed

To switch to the next adjacent package on the same hierarchy level:

» Press the key combination [Alt]+[Down] arrow key.
The package on the same hierarchy level which is below is selected.

How to proceed

To switch to the first subordinate package:

» Press the key combination [Alt]+[End].
The first son package is selected.

How to proceed

To switch to the parent package:

» Press the key combination [Alt]+[Home].
The parent package is selected.

B-1.5.3 Finding an Element's Package

Elements of a package which is selected in the model tree are shown in the list of model elements. There are various ways to find out whether the element in this package is "at home" (i.e. whether the package is an owning package):

- The path component which is shown in the `Path` column is identical to the path component of the current package (see page B-4).
- The `R` (for reference) is **not** shown in the `Status` column (see page B-8).
- You jump to the element's owning package.

Read about the differences between packages and reference packages in section "Category of Usage of Packages", page A-60.

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How to proceed

To jump to an element's owning package and, in doing so, show the element's context:

» Select the element in the result region, detail view or list of model elements.

» Select `Jump>To Element`.
The element's owning package is selected in the model tree.

» To jump back to the original element again, select `Jump>Back`.

B-2 The Basics for Working with Innovator

With such a wide diversity of objectives and needs which you will find solution methods for in Innovator, whether you want to create simple displays of your model structures or prepare implementation for complex software solutions, you will have to repeat some tasks numerous times when working with Innovator.

This chapter deals with concepts, procedures and recommendations which form the basis of all tasks which you perform using Innovator.

You can use the following specifications–largely independent from the methods used or the Innovator edition–to gain an understanding of relationships which make the tool so powerful and versatile. You will then be able to use Innovator for all your needs.

For most tasks, Innovator uses consistent mechanisms. These are the topics covered in this chapter. In particular cases, deviations from these standard procedures may be necessary if methodical requirements make it so. A detailed description of how to proceed in these cases is included in the manuals for the individual Innovator editions.

In this chapter you will learn

- How to distinguish between the various elements of your model (see chapter B-2.1.1, "Disambiguation: Element Types, Model Elements, Relationships etc.", page B-19)
- Why some elements can be displayed in various views even though they only exist once (see chapter B-2.1.2, "Logical and Graphic Existences of Model Elements", page B-22)
- How you can ensure that your work will not conflict with that of your team colleagues when working on multi-user installations (see chapter B-2.1.4, "Reserving Elements for Editing (Locking)", page B-28)
- How to create (see page B-33), modify (see page B-49) and delete (see page B-61) the various model elements.
- Which requirements exist for uniqueness of names and how these requirements can be influenced (see chapter B-2.6, "Reducing File Path Components Using Namespaces", page B-64)

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B-2.1 Information about Elements in Innovator Models

Innovator is a tool which supports you during planning, implementation and maintenance of projects–software projects in particular.

Various methods form the basis for this–depending on the objective and the programming language. The fact that the project is split and separated into small modules is something that all methods have in common. These modules are placed in relation to each other, so that ultimately one picture of the project–the model–is generated.

This means that Innovator is initially a graphic tool which you primarily use to create diagrams to portray certain aspects and relationships. However, this description does not do Innovator's performance justice. Each module contains one specific semantic which enables extensive test mechanisms, consistency throughout the models and, last but by no means least, code generation.

You can include various modules in each method. In this way, you can use e.g. terminators, processes and stores, to specify data flows in structured analysis. You can specify function calls using operations, storage areas and parameters in structured design.

However, you use actors use cases etc. for system and software requirements in object-oriented programming. You can include classes and components, as well as their dependencies and relationships for the system's design.

You will learn which methodical meaning an element specifically contains in the corresponding chapters of the Innovator editions. The following chapter deals with which concepts you have to be aware of if you want to use the elements for more than just for diagrams.

Three Resources for Modeling

There are three resources available to you in Innovator for modeling your project:

- **Model elements:** these are the foundations which your model is made up of. Depending on which method you use in Innovator, various model elements are available: You create them, set the required properties and store commentarial text about the model element.
- **Structuring the model:** You can group your model's model elements as many times as required and hierarchically structure the groups. In doing this, you obtain a structure of the model. This facilitates communication within the project team and maintenance of the model elements. You use so-called packages to structure the model.
- **Displaying model elements and their relationships**: If the model elements are shown once, you can view these from the most varied of angles: You display them in diagrams, tables etc. and add their relationships to other model elements.

B-2.1.1 Disambiguation: Element Types, Model Elements, Relationships etc.

You will frequently come across terms which require further explanation when working with Innovator. The most important will be explained for you here to begin with.

Model Elements

The foundations which your model is made up of are called model elements. The form of your graphic display is specified by the method's notation (e.g. SA processes as a circle, objects and UML classes as a rectangle). You can influence the display in some cases (e.g. classes as an icon instead of a rectangle). Which information needs to be included in the model element is also set in the methods (e.g. name, numbering, type or stereotype). Depending on the Innovator edition, model elements can also include further elements (e.g. include class attributes and methods) or can be refined using diagrams (e.g. SA process, activity or business process modeling).

In Innovator, model elements have special properties:

- A model element only **exists** precisely once in a model in precisely one package. However, it can be assigned to (referenced therein) more than one package.
- Model elements can also be **displayed** in one or more diagrams. You can only create and display relationships between model elements there.
- Model elements have a maximum of one name.
- You can only store text for model elements.

You can read about which properties a model's model elements can contain and how you can assign these properties in the chapters in the respective Innovator editions. You can read how to work with the model elements, i.e. create and delete them, arrange them in diagrams, in the following chapters.

Relationships

For a complete modeling, it is not enough to simply create and specify you model's model elements. You also need to specify the relationships between model elements.

Relationships between model elements can have considerably different meanings, depending on your model's methods and on the current context, e.g.:

- **Data transport:** in SA diagrams, you can use the relationship between processes, terminators and stores to display how data should flow and how model elements change this.

  You can display transfer parameters between operations as calls in the structured design's operation diagrams.

  You can specify the object flow in activity diagrams in the Innovator Business and Innovator Object editions, i.e. which documents or information should be edited or processed by which activities.

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- **Relationship:** you mainly display model elements and their relationships to each other in object-oriented methods, as well as with data modeling. You can e.g. examine which inheritance, composition or association relationships exist between classes here.

  You can use relationships to display dependency relationships between model elements in packages at the packages level.
- **State transition:** if the state of a model element changes due to results, you can display this using state transitions.

These relationships are all graphically portrayed as lines in the model's diagrams. They can be directional–i.e. arrow points to one or both ends–or nondirectional. A relationship's appearance is set in the notation of the respective methods (e.g. whether the line is drawn through or dotted, curved or straight).

Note **Relationships are not shown in the model browser.**

Elements The term "element" is used as an umbrella term for model elements and relationships (or other graphic elements as well) throughout this book for specifications which do not depend on a methodical meaning of a certain model element or a relationship, but rather Innovator functions which you can use (e.g. `Element>New` or `Element>Rename`).

Element Types There is a specific set of element types (e.g. classes) available for you in each method. You can display model elements of one or more element types in diagrams. The element types have specific relationships between themselves. These relationships are also from a specific element type in each case.

The usable element types are method-dependent and therefore dependent on the respective Innovator edition.

- **Diagram types:** you can e.g. find diagrams of the use case diagram type, class diagram, sequence diagram etc. in the Innovator Object edition edition. Whereas, in the Innovator Function edition edition, you use diagrams of the SA diagram, operation diagram and module diagram type.
- **Types for model elements:** only elements from extremely specific types are permissible in diagrams of a type. This means that you can only use model elements of the actor, use case or system type in use case diagram, whereas in class diagrams, you can only use model elements of the class type.
- **Types for relationships:** relationships between model elements are also specially adapted to the diagrams: This means that you can only use data flow in an SA diagram while transitions are reserved in the state diagram.

You can set certain properties at the same time for model elements of a type (e.g. fonts in diagrams of various types). Properties which you assign to an element type can normally be overwritten at a later date for individual elements of this type. You can set the following properties for element types:

- Fonts and colors
- Element colors
- Labels
- Text templates
- Property values
- Filter

You can set the following properties individually for each element type in the editors for diagrams and tables:

- Pop-up menu
- Toolbar
- Colors

This means that you can e.g. set other entries in the pop-up menu for SA diagrams, as in operation diagrams.

Packages

Each model element in Innovator is stored in precisely one package. Packages can be divided hierarchically. This means that you can create entire package structures. Which package you create an element in (or which package you move an element to) solely depends on the structure requirements of your model. Read about the differences between packages and reference packages in section "Category of Usage of Packages", page A-60.

Views of Model Elements

You can examine model elements in your model under the most varied of aspects. You can choose between various display forms for each of these aspects:

- **Diagrams:** diagrams enable the graphic display of model elements, in particular, their relationships to other model elements. You can display one and the same model element in any desired number of diagrams (in which the model element is permissible).
- **Tables:** tables are also a special view of certain elements. They display relationships in the form of structured text.
- **model browser:** you can display your model in its hierarchical structure here. You can identify the package structure and which model elements are in which package. The model browser is consequently the table of contents of your model.

  Diagram refinement is apparent in methods which support hierarchical diagrams (e.g. SA diagrams in structured analysis, activity diagrams in BPM).

  No relationships between model elements are displayed in the model browser.

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B-2.1.2 Logical and Graphic Existences of Model Elements

A model element only **exists** precisely once in a model. It is identified by its name, element type and the path component in the package hierarchy. All specifications which are available for the model element (name, path component, text, date of creation or modification, creator's user name etc.) are always stored in the repository together with the model element. Collection of all data of a model element is referred to as a logical existence of this model element.

However, a model element can be **displayed** in any number of diagrams (or in none as well). Some model elements can even be displayed more than once in a diagram (e.g. the bar in SA diagrams). However, it always concerns the same model element: The same data always forms the basis, regardless of which display you are viewing the specifications in. This naturally also means that modifications to data which you make with an element's existence also affects all other existences. Model elements are displayed as graphic existences of a model element or **reference** to a logic existence of the model element.

Note **Graphic display is not mandatory. It can by all means be possible that a model element exists logically in an element but is not graphically displayed in a single diagram.**

At first glance, this statement doesn't seem to be anything special. However, some mechanisms are linked with this issue, which are perhaps not initially visible.

Creating vs. Adding

You need to take the difference between the logical and graphic existences of a model element into consideration if you want to display a model element in a diagram: you need to decide whether you want to create a model element which has not existed before in the model before or whether you want to display a model element in the current diagram which is already available in the model. To do this, use

- The `Insert><Element Type>>New` menu item for creating a model element
- The `Insert><Element Type>>Add Existing...` menu item for displaying a model element again

Display

In some diagrams, you cannot identify whether the model element was created here or whether it was added in the diagram.

Exceptions:

- In SA diagrams, added processes are marked with an asterisk `(*)`.
- In some cases, the package path of the model element can be entered.

Deleting vs. Removing

As with creating or adding a model element, you also need to take logical or graphic existences into consideration if you no longer want to depict a model element in a diagram. You need to decide whether the model element should be deleted from the entire model, and with it, all of its displays, or whether only one of its references should be removed from the diagram. To do this, use

- The `Edit>Delete` menu item for deleting a model element from the model
- The `Edit>Remove from Diagram` menu entry for removing the reference of a model element

Adding and Removing Relationships

So far we have only addressed which concept lies at the heart of adding model elements in a diagram. The question still remains as to how this concept affects the relationships between model elements.

Firstly: you will spend ages searching for a `Insert><Relationship>` menu item to no avail. Adding in diagrams is exclusively reserved for model elements (exception: dependencies between packages, see page A-50). You can, however, display relationships which a model element in the model has to other model elements: assign it a maintenance status. You can use this to set whether which relationships this model element has in the model should be shown in the current diagram. Read how to work with the maintenance status in chapter B-2.1.3, page B-24.

Note

The maintenance status is a reference to a model element, i.e. you can assign another maintenance status in each diagram which depicts the model element, which having an influence on other diagrams.

This means that relationships between two model elements can therefore be displayed in more than one diagram. If you no longer wish to display a relationship in a diagram, you need to decide whether this should only be removed from the current diagram or whether you want to delete the relationship from the entire model. To do this, use

- The menu item `Edit>Delete` for deleting a relationship from the model
- The menu item `Edit>Remove from Diagram` for removing a relationship

Copying–When Creating, When Adding

You can copy some model elements and insert them into the desired new position again. At first, this function doesn't see particularly complicated, as it is known from other applications. However, in Innovator some fairly complex mechanisms are concealed behind the actual copying itself: Depending on where you insert such a copied model element, sometimes you create a new model element, sometimes you merely add another graphic existence.

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Read about the intricacies and secondary effect in chapter B-2.2.8, "Copying Elements", page B-45.

This basically applies:

- If–within a model–you insert a copied model element in the **model browser**, **you also create a new model element** in the package which is selected at the time.
- If–within a model–you insert a copied model element in a **diagram**, **you add a model element in doing so**, and therefore only create another graphic existence of the model element.
- You can only insert a model element which you have copied using the model browser again via the model browser. You can only insert a model element which you have copied in the diagram again in a diagram.

B-2.1.3 Displaying Relationships to Model Elements from Other Diagrams (Maintenance Status)

You can view one and the same model element from various angles by displaying it in various diagrams. Display a part (section) of relationships to other model elements in each diagram and, in doing so, emphasize certain conditions in a targeted manner.

Example One of these perspectives could be present: "I want a diagram which really shows all relationships of the current model element to other model elements."

To do this, you can obviously trawl through all the diagrams looking for this model element and subsequently combine all existences and relationships in one diagram. This means that you regularly have to manually root out possible extensions of the model and carry out maintenance in your diagram by adding relationships to model elements in the diagram and reconstruct the corresponding relationships.

You can also let Innovator do this maintenance for you. Add the model element in the diagram and assign it the property of maintenance throughout the models. Innovator then automatically depicts all relationships which contain this model element in the model in the current diagram as well. Innovator automatically adds all necessary model elements in the diagram for this purpose. If other relationships to model elements are added anywhere in the model at a later date, these will also be added to the diagram. This means that your only task is to occasionally position the model elements which were added automatically so that they are clear in the diagram.

Note **Each model element should be displayed in at least one diagram with all its relationships i.e. in its entirety. The easiest way to do this is set the maintenance status of this model element to `Complete model` in at least one diagram.**

Model Elements which can be Maintained

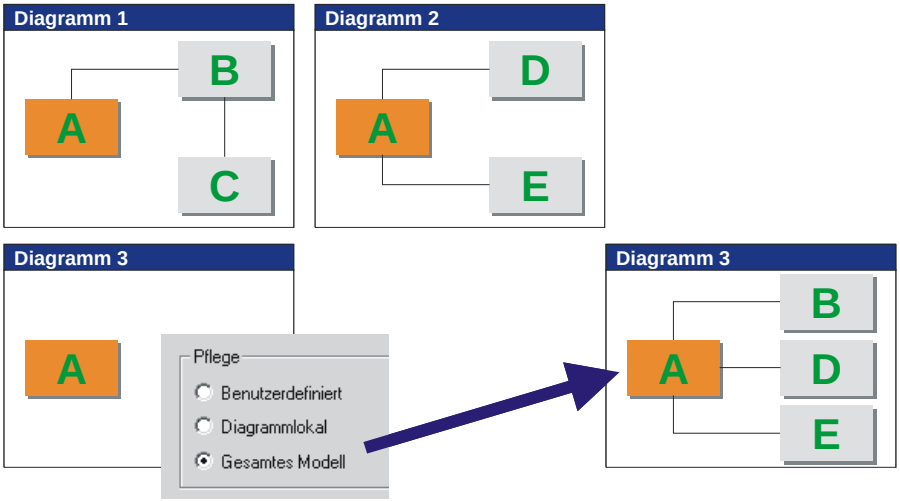
You can set the maintenance status for the following model elements:

- In ER and SER diagrams: entities with their relationships
- In class diagrams: classes with their relationships
- In component diagrams: components with their relationships
- In package diagrams: packages with their dependencies
- In SD module diagrams: modules with their calls
- In SD operation diagrams: operations and data fields with their calls

Types of Maintenance

Innovator differentiates between three stages of diagram maintenance:

- `Complete model`**:** all relationships which exist to the model element in the entire model are always shown. This can lead to new model elements with the related relationship being automatically added in this diagram. The added model elements contain their own maintenance status `Local in diagram`. This means that all existing relationships of a model element are visible during global maintenance.



Note

If you want to jump to a model element which is depicted in more than one diagram using the menu command `Jump`, the target diagram is asked for in a list. The diagrams which have model elements with the `Complete model` maintenance status are marked in the list by an asterisk `(*)`.

- `Local in diagram`**:** all relationships between the objects of this diagram are always shown. If a model element, to which a relationship already exists, is added to the diagram for the first time, then this relationship is also shown. However, model elements will not automatically be added from other diagram.

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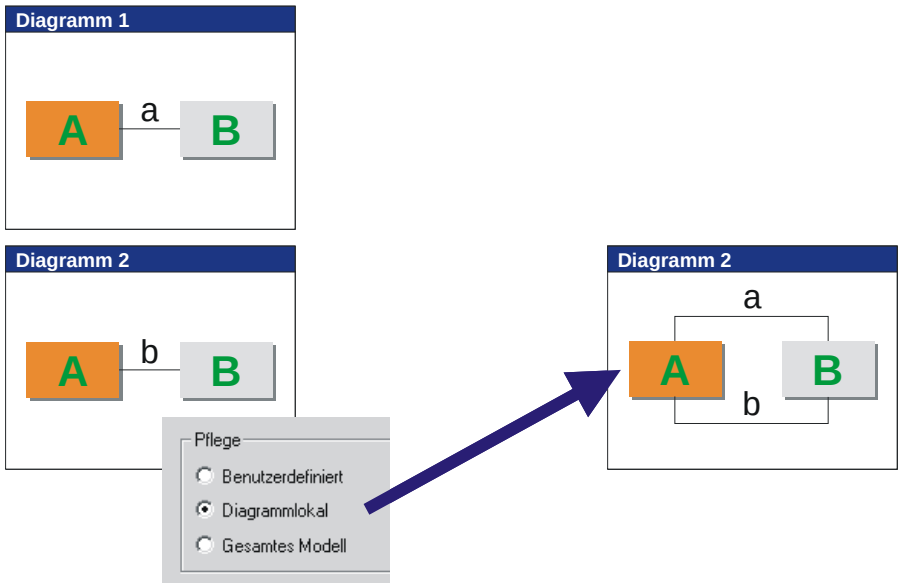

- `User defined`: only those relationships are shown, which you have added to this diagram. Automatic maintenance does not take place.

Note **If you remove (not delete) a relationship, in doing so you switch the maintenance status of the model elements involved to `User defined`. With immediate effect, Innovator no longer automatically maintains the relationships of these model element in the diagram.**

Maintenance Status According to Relationship Type

You can only set **the fact that** relationships of classes or components will be maintained using the maintenance status in class and component diagrams. You can also specify **which** relationships should be maintained here.

Two groups of relationships are distinguished between here:

- **Associations, aggregations:** you can set whether the maintenance should only have an effect on navigable relationships or on all of them.
- **Generalizations, dependencies, interfaces:** you can set whether only the relationships to the parents should be maintained or on all of them.

Assigning Maintenance Status when Adding

You set the maintenance status when adding an element. You can also change them at a later time.

Note **You can set which maintenance status added and created elements should have for classes and components using templates (see section "Setting the Maintenance Status of Elements", page A-107).**

How to proceed

To set the maintenance status when creating a model element:

» Jump to the diagram and lock it if necessary.
» Select `Insert><Element Type>>Add Existing...`.
  The dialog box of the same name appears. Model elements which can be maintained have one `Maintenance` tab or group.
» Activate the radio button for the desired maintenance status.
» Click on `[Apply]` and close the dialog box with `[OK]`.

Changing the Maintenance Status

You can change the maintenance status of a model element (a reference to the element) at a later date.

How to proceed

To assign a maintenance status to a reference to a model element at a later date:

» Jump to the diagram and lock it if necessary.
  You do not need to lock the model element, as you only change the depiction, not the logic when carrying out maintenance.
» Select the model element and select `Edit>Properties...`.
  The dialog box of the same name appears. All model elements which can be maintained have a tab `Maintenance`.
» Select the tab `Maintenance`.
  In most cases, you will find the group box `Maintenance` here. For classes and components, there is one group for each group of relationships.
» Activate–if necessary, in the group which specifies the relationship types–the radio button for the desired maintenance status.
» If you want to limit the relationship types to certain cases for classes and components, activate the check box `Navigable relationships only` or `Relations to required elements only`.
» Close the dialog box with `[OK]`.

Showing Completeness

If you manually remove relationships from a diagram, the model's depiction is incomplete with regard to the model elements involved.

In the diagram, you can show whether all relationships of a model element are completely displayed in a diagram, i.e. whether other relationships apart from those which are currently visible exist in the model.

Note

The display of the maintenance status is only available in diagrams which have objects with a maintenance status (e.g. in class, component and object diagrams).

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The completeness of relationships is divided into three categories:

- All relationships which the model element has in the model are displayed. This also means that all model elements to which relationships exist are displayed in the diagram. The name of the model element is surrounded by a full frame.
- All relationships which the model element has to other model elements in the current diagram are displayed. The element's relationships are locally complete. The element is not marked in any particular way.

  This depiction implies that elements which have relationships still exist outside of the diagram.
- All relationships of a model element are not displayed once within the diagram: The relationships of the model element to other model elements in this diagram are not fully displayed. This can be out of choice, but could also point to an error. This can be identified by a dashed frame around the name of the model element.

Note **Font and text color of the selected maintenance type influences how model elements are displayed in ER and SER diagrams.**

Activating the Completeness Display

You can set how complete you want your display to be for all diagrams of a type.

How to proceed

To show the completeness of relationships in model elements of a diagram type:

» If necessary, go to a diagram of a diagram type.

» Activate `View>Completeness Indicators`.

B-2.1.4 Reserving Elements for Editing (Locking)

Innovator has its own locking concept which prevents multiple users from editing the same element (model element, diagram, table, text etc.) at the same time and, in doing so, overwriting changes.

All data of a repository is managed from a central location: the repository server. All Innovator applications receive their information from the repository server and present it to the user. Only data which is relevant for the current window is exchanged between your user interface and the server. Changes to this data are immediately conveyed to the repository server. Each user always works with the most current data, as there is no local copy, and therefore no possible outdated copy of the project data.

The same diagram can be displayed on various workstations at the same time. However, only one user can edit the diagram. User coordination takes place via an explicit locking concept.

Provided a user has the corresponding access rights, he needs to lock the particular element before modifying it.

Locking

If you want to alter model data, you need to ensure that no other user is modifying the same data at the same time, otherwise discrepancies and inconsistencies could occur. This requirement is realized in Innovator by two mechanisms:

- Reserve the element which you want to alter and lock it for other users. This reservation is managed by the repository server. It ensures that no other user with varying access can make changes in the model while it is locked. You can only carry out the necessary functions for altering the element once it is locked. Only you or the administrator can remove the lock.

Note

Unlike with diagrams or tables, any number of graphic depictions from a model element can exist in the model. If you want to change a model element, you can lock it using any of your displays.

- An element which is affected by changes made to another element can not be locked by another user at the same time as the changes are being made. e.g. A process which has a refinement diagram cannot be globally renamed if the refinement diagram is locked by another user (see section "Effect of Renaming on the Model Structure", page B-49).

Identifying Locks in the Model Browser

There are three possible locking states for each element:

- **Unlocked:** no user has currently locked the element. You can reserve and edit it (as long as you have access rights, see page A-3).
- **Locked (by you):** you have locked the element yourself. You can edit it as and when required.
- **Locked by another user:** another user has reserved the element. You cannot edit the element.

In the model browser, each element has the same display for its locking state: The locking state is shown in the `Status` column in the list of model elements or result region.

(empty)	The element is unlocked.
`L`	The element is locked by you.
`-`	The element is locked by another user.

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If you have activated the toolbar display in the model browser you can use the icons to identify whether a selected element is locked:

Icon	Meaning
	No lockable element is selected.
	None of the selected elements are locked.
	All of the selected elements are locked.
	Both locked and unlocked elements are selected.

The user name of the user who has currently locked the element is shown next to the locked element in the status bar.

Identifying Locks in the Diagram

In diagrams, locking of the actual diagram and locking of a selected model element are distinguished between:

Icon	Meaning
	The diagram is not locked. No lockable element is selected.
	The diagram is not locked. None of the selected elements are locked.
	The diagram is not locked. All of the selected elements are locked.
	The diagram is not locked, however, both locked and unlocked elements are selected.
	The diagram is locked. No element is selected.
	The diagram is locked. None of the selected elements are locked.
	The diagram is locked. All of the selected elements are locked.
	The diagram is locked, however, both locked and unlocked elements are selected.
	You do not have access to the diagram. (e.g. because of it being locked by another user).

Locking Elements

Elements you have created yourself are at first automatically locked for you, and you are assigned the access rights for them. In addition, you can lock each element at different points at a later time (provided you have the required access rights and no other user has locked it):

- As in the model browser each element of the model is shown (in some cases several times), you can lock items for editing directly there.
- You can also lock model elements in each diagram in which a graphic display of the model element exists.
- Model elements can also be locked directly in the dialog boxes `Element>Properties...` or `Edit>Properties...`. The `[Apply]` button is replaced with the button `[Lock]` or `[Unlock]` until the model element has the respectively required locking state. The locking state is not changed by closing the specified dialog boxes.
- You can also lock diagrams and tables when opened.

Note

You can use the integrated Innovator messages to inform another user that they should release a certain element (see page B-139).

If a user has locked an element but is not currently available, the administrator can log the user out of the model and, in doing so, release the elements (see page A-9).

If the administrator is also unavailable, the repository can be shut down using `-f` (forced shutdown)–no other user can be logged on. All locked elements are unlocked.

How to proceed

To lock any element (model element, diagram, package, table etc.) in the model browser:

» Jump to the model browser.

» Select the package which contains the desired elements in the model tree.

» Select the elements which you want to lock in the list of model elements.

If there is an element within the selected elements which is not yet locked, the menu item `Edit` is shown in the `Lock` menu.

Read how to use elements from various packages at the same time in chapter B-1.4, "Collecting as Many Elements as Required in the Result Region", page B-11.

» Select `Edit>Lock`.

All selected elements which are not yet locked by you are reserved for you. Elements which are locked by another user are ignored.

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How to proceed

To lock a model element in the diagram:

» Go to the diagram.

» Select the elements which you want to lock.
If there is an element within the selected elements which is not yet locked, the menu item `Edit` is shown in the `Lock` menu.

» Select `Edit>Lock`.
All selected elements which are not yet locked by you are reserved for you. Elements which are locked by another user are ignored.

How to proceed

To lock the current diagram:

» Click on a free point in the diagram.
If the diagram is not yet locked, the menu item `Lock` is shown in the `Diagram` menu.

» Select `Diagram>Lock`.
The diagram is locked.

Unlocking Elements

When you having finished working on an element you should release it again. Other users cannot edit the element until this is done.

Note

You can unlock all locked elements at the same time by logging-out of the model and then logging-in again.

How to proceed

To unlock any element (model element, diagram, package, table etc.) in the model browser:

» Jump to the model browser.

» Select the package which contains the desired elements in the model tree.

» Select the elements which you want to unlock in the list of model elements.
If there is an element within the selected elements which is not yet unlocked, the menu item `Unlock` is shown in the `Edit` menu.
Read how to use elements from various packages at the same time in chapter B-1.4, "Collecting as Many Elements as Required in the Result Region", page B-11.

» Select `Edit>Unlock`.
All selected elements which are not yet unlocked by you are unlocked.

How to proceed

To unlock a model element in the diagram:

» Go to the diagram.

» Select the elements which you want to unlock.
If there is an element within the selected elements which is not yet unlocked, the menu item `Unlock` is shown in the `Edit` menu.

» Select `Edit>Unlock`.
All selected elements which are not yet unlocked by you are unlocked.

How to proceed

To unlock the current diagram:

» Click on a free point in the diagram.
If the diagram is locked, the menu item `Unlock` is shown in the `Diagram` menu.

» Select `Diagram>Unlock`.
The diagram is unlocked.

B-2.2 Creating and Changing Model Elements

Creating elements normally follows the same pattern:

- **Diagrams:** Apart from a few exceptions, diagrams are created in the model browser (see page B-34). However, you can also create from an open diagram in a refinement diagram which can be refined by other diagrams (e.g. SA diagrams, activity diagrams). In some diagrams you can also create a supplementary diagram for a model element (e.g. a state diagram for a bar in the Innovator Function edition edition or one for classes in the Innovator Object edition edition).
- **Model elements:** you can either create model elements in the model browser (see page B-38) or in a diagram (see page B-39). To create a model element means that it does not already exist in the model and you are creating it as new. If the model element is created once, you can add it to any number of diagrams (see chapter B-2.1.2, "Logical and Graphic Existences of Model Elements", page B-22).
- **Relationships:** you normally create relationships between model elements in diagrams (see page B-43).

A model-wide or package-wide default name is assigned to the element upon creation as standard. You can change these names afterwards. However, you can set up your system in such a way that the dialog box appears

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which you can set element's properties in when the element is being created. For more information, read chapter B-2.2.1, "Enabling Creating with Dialog Boxes", page B-34.

B-2.2.1 Enabling Creating with Dialog Boxes

Elements are created in Innovator without dialog as standard. The elements then get given a default name and a default layout with properties. If the element is created, you can make the desired changes.

However, you can set your system in such a way that the dialog box `Element/Properties` appears immediately after an element is created. This enables you to make the desired changes to the element straight away.

You make the setting individually for each editor (model browser, table editor, diagram editor). This means that you can e.g. set another setting in the use case diagram, as in the class diagram or in the model browser.

How to proceed

To be able to immediately make changes when an element is created:

» Got to the editor which you want make the setting for.

» Select `Extras>Options...`.
The dialog box of the same name appears.

» Activate the check box `Set properties after creation` in the general tab.

» Click on `[Apply]` and close the dialog box with `[OK]`.
If you create an element, the dialog box `Element/Properties` appears at the same time; you can make the desired changes here.

B-2.2.2 Creating and Opening Diagrams

You can create the majority of a model's diagrams using the model browser. The necessary steps are described over the following pages. If a diagram type requires another procedure, you can find a detailed description of this in the relevant chapter of the Innovator edition.

You can create diagrams which fulfill the following properties using the model browser:

- The diagrams created in such a way are empty upon creation.
- You make a view which you can define yourself to a large extent.
- You can choose the name of the diagram.

In the editions Innovator Object and Innovator Business, you have far-reaching configuration options for model elements and diagrams. You can only create diagrams which already have templates or types configured for them in the model here For more information, read

- How to create diagram templates (Innovator Object edition edition and Innovator Business edition) in chapter A-4.3.5, page A-99.
- How to define and provide types of diagrams (Innovator Business edition edition) in chapter D-7.2, "Enabling Creation Diagrams", page D-186.

Other Information

- chapter B-2.3.1, "Changing Names, Relationships and Declarations", page B-49
- chapter B-2.2.1, "Enabling Creating with Dialog Boxes", page B-34
- chapter B-2.2.3, "Working with Hierarchical Diagrams", page B-35
- chapter B-2.3.2, "Moving Elements in Another Package", page B-53

How to proceed

To create a diagram with the model browser:

» Jump to the model browser and select the package where the new diagram should be stored in the model tree.
You will find all menu items which you can use to create corresponding elements in the current package in the `Element>New Diagram` submenu.

» Select the entry of the diagram which you want to create in the `Element>New Diagram` submenu.
The diagram is created in the current package. It contains a model-wide or package-wide unique default name.

» To open the diagram, select the corresponding entry in the list of model elements and select `Element>Open`.

B-2.2.3 Working with Hierarchical Diagrams

You can portray hierarchies using some diagram types in Innovator, i.e. refine certain elements. This means that every refinement diagram depicts a detailed view of a model element in a higher-level diagram. Hierarchical diagrams are e.g.

- SA diagrams from the Innovator Function edition edition for processes
- Activity diagrams in the Innovator Object and Innovator Business editions for activities

Tree structures result from refinement; they can be used for special functions. In this chapter you will learn how to

- Create an empty refinement diagram to a model element (see page B-36)

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- Transfer one or more of a diagram's model elements together into a new refinement diagram (see page B-36)
- Resolve a hierarchy level by replacing a model element with the model element of its refinement diagram (see page B-37)

Note **You can only create the top-most level of a hierarchy in the model browser (see page B-34).**

Creating an Empty Refinement Diagram to a Model element

You can create an empty refinement diagram either in the model browser or in the diagram which contains the model element. The refinement diagram is created in the package which also contains the model element.

Neither the diagram nor the model element which you want to refine must be locked if you want to create an empty refinement diagram.

How to proceed

To create an empty refinement diagram to a model element:

» Select the model element. Ensure that only this model element is selected.

» Select `Element>New Diagram><Diagram Type>`.

An empty diagram of the highlighted model element is opened. It contains the name of the model element.

Transferring Several Model Elements in a Refinement Diagram

If several model elements already exist in a diagram and you want to transfer these together into a (new) refinement diagram, in doing this you create a new model element in the current diagram, which replaces the relocated model element.

To e.g. transfer model elements from an **SA diagram** into a new refinement diagram, the following prerequisites must be fulfilled:

- If **stores or terminators** are selected, all model elements which are directly linked with them by flows also need to be selected.
- If one of the selected model elements is the **source of a split flow**, either no or all target elements need to be selected.
- If one of the model elements is the **target of a merge flow**, either no or all source elements need to be selected.

How to proceed

To transfer model elements from the current diagram to a refinement diagram:

» Lock the current diagram.

» Select one or all of the model elements which you want to transfer to the new refinement diagram. Please note the rules mentioned above.

» Select `Edit>Hierarchy>Insert Level...`.
The dialog box of the same name appears.

» Enter the name of the new parent element in the field `Name` and close the dialog box with `[OK]`.
The selected model elements and all relationships between them are moved down to the next lowest diagram level. The selected model elements and relationships between them are replaced by a parent element in the current diagram and are no longer shown.

Resolving Hierarchy Levels

If you want resolve a refinement diagram and transfer its model elements and relationships to the top-most diagram, in doing so, the parent element is replaced with the refinement diagram's model elements.

To resolve a refinement diagram, the following prerequisites must be fulfilled:

- The diagram is locked by you.
- A model element which has a refinement diagram is selected.
- The model element is locked.
- The diagram which contains the model element's refinement is not locked by another user.

Note

The highest level's diagrams cannot be resolved.

How to proceed

To resolve a refinement diagram:

» Lock the current diagram and the model element which refinement diagram you want to resolve.

» Select the model element.

» Select `Edit>Hierarchy>Resolve Level`.
Instead of the selected model element which was displayed, all model elements and relationships from the refinement diagram appear. The refinement diagram is deleted.

B-2.2.4 Creating Model Elements

By creating a model element you create a set of data to this element which identifies it uniquely model-wide and package-wide. A model element can but does not necessarily have to be displayed in one or more diagrams.

Creating elements follows the same pattern in all Innovator editions. However, there are sometimes varying prerequisite configurations.

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Note

You can always configure which package a model element should be redirected to, which will be created in the context of another element (see page A-68).

You can also assign a model element to another package at a later date (see page B-53).

There are can normally two ways to create most model elements:

A: **Via the model browser**: You can enter any number of packages which should contain the model element.

B: **Via a diagram**: the model element is–as long as it is not configured differently–created in the package which also contains the diagram.

Some model elements can only be created in diagrams, especially if they cannot be viewed in the model browser, e.g. relationships.

In the Innovator Object and Innovator Business editions, you have far-reaching configuration options for model elements:

- Templates are necessary for many model elements.
- Other elements are relinked to certain stereotypes with the existence of classes. Read how to create templates for these element types in chapter A-4.3.2, page A-91.

You can also create various model elements in the class browser in these Innovator editions (see B-5.2, "Using the Class Browser", page B-126).

Read how to insert copied model elements in the section "Copying within a Model", page B-47.

More Information

- chapter B-2.2.1, "Enabling Creating with Dialog Boxes", page B-34
- chapter B-2.3.1, "Changing Names, Relationships and Declarations", page B-49
- chapter B-2.3.2, "Moving Elements in Another Package", page B-53

Creating Model Elements via the Model Browser

If you create a model element in the model browser, it is not initially displayed in a diagram. You can subsequently add it to any number of diagrams which contain permissible elements of this type.

How to proceed

To create a model element with the model browser:

» Select the package in the model tree which should contain the model element.

You will find all menu items which you can use to create corresponding elements in the `Element>New` or `Element>New Diagram` submenu.

» Select the entry of the model element which you want to create in the `Element>New` or `Element>New Diagram` submenu.
If it is permissible, the model element is created in the current package. Otherwise, select a package from the dialog box which appears.
It contains a model-wide or package-wide unique default name.

Creating Model Elements via the Diagram

When you create a model element via a diagram, you implicitly carry out two steps:

- You create the model element in the model, i.e. you create the minimum data set that identifies a model element (element type, name, package path).
- You create a (first) graphic existence of the model element in the diagram, i.e. you add the model element to the diagram (see page B-22).

For each diagram type in Innovator, it is specified which model elements are permitted in these diagrams. This means you cannot create any desired model elements in each diagram, but instead only those that are also practical.

The special toggle menu item `Insert><Element Type>>Add existing` exist for reusing existing elements of **business process models**. If this is activated, then it changes the property of the remaining `Insert` menu items such that no new element of the type can be created, but instead one can be chosen from those which already exist.

The number of model elements in a diagram is not limited by the system. However, a number below ten is recommended to maintain a clear structure.

Note

You can set the maximum permissible number of model elements in various Innovator editions. You can use a corresponding Innovator verify option to check that the procedure is being adhered to.

How to proceed

To create a model element with a diagram:

» Jump to the diagram and lock it.
You will find all menu items which you can use to create corresponding elements in the current diagram in the `Insert` menu. The menu items in the `Insert` menu are divided into additional submenus in some Innovator editions.
If you do not enter a position for the model element, a default position is selected.

» If you want to create the model element in a certain position, click on this position in the diagram.

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» Select the entry of the model element which you want to create in the `Insert`– or the desired submenu.

The new model element is–as long as it is not configured differently– created in the package which also contains the diagram and is placed, if necessary, on the marked position. It contains a model-wide or package-wide unique default name.

B-2.2.5 Selecting Elements

Before you can edit elements in the model browser, you need to select them first. This choice is called a selection.

Innovator always differentiates between two types of selection:

- **Single selection**: This is usually used to edit the selected element
- **Multiple selection**: This is usually used to collect the selected elements in the result region, whereby the sequence of the selection is irrelevant.

To select elements in the model browser, proceed as follows:

Objective	Procedure
Selecting an element	Click on the element with the left mouse button [LMB]
Selecting elements of a hierarchy level in the same area of the model browser, expanding selection	Select the first element, then click on an element of the same hierarchy level with the [LMB] while pressing the [Shift] key; all elements of this hierarchy level lying between these two elements are selected
Selecting several desired elements in the same area of the model browser, expanding selection	Select the first element, then click on any desired element in the same area of the model browser with the [LMB] while pressing the [Ctrl] key
Selecting all model elements in the list of model elements or in the result region	Click on an element with the [LMB], then select the menu item `Edit>Select All` or press the key combination [Ctrl]+[A]
Deselecting individual elements	Click on the element with the [LMB] while pressing the [Ctrl] key
Cancel selection	Click in a free area

Note

To avoid accidentally opening numerous windows, you will be asked to confirm the command if you carry out the corresponding command as a multiple selection of up to ten model elements.

B-2.2.6 Granting Access Rights to Elements

You can transfer access rights which you as a user have for individual elements to other user groups. You have these access rights if you e.g. created an element yourself. You do not require administrator rights to transfer these.

If you have the element right to an element (and can therefore transfer it to other user groups), then it will be shown in the list of model elements in the model browser. These elements are shown in the `Status` column by an `A`.

How to proceed

To transfer the access rights to a particular element to another user group:

» If necessary, go to the model model browserbrowser and enlarge the list of model elements so that the `Status` column can be seen.
The element rights which the user group has currently selected are shown in the `Status` column.

» Select `Model>Administration>Maintain Access Rights...`.
The dialog box of the same name appears. All user groups of the current model are listed in the list box `Select a group` list.

» Select the user group which you want to transfer certain element rights to in the dialog box.
You can work in the model tree while the dialog box is open.

» Select the element in the list of modellist of model elements elements whose access rights you want to transfer to another user group.

Note

If you accidentally select an element which you do not have access rights to, then this element will be ignored when the access rights are assigned.

» In the dialog box, click on `[Set]`.
All of the selected elements are shown in the `Status` column by an `A`.

Withdrawing Element Rights

Whereas all users can grant element rights to other groups, only the administrator can withdraw these rights again (see chapter A-1, "Managing Users, Groups and Rights", page A-3).

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B-2.2.7 Creating and Changing Relationships

You can only create relationships between model elements in diagrams.

The options for creating relationships are usually subject to certain conditions, which are affected by the method and the current context. As a result, the procedure can only be explained in very general terms here. If special prerequisites need to be fulfilled, read about these in the respective chapter of the Innovator editions.

When you create a relationship, you specify the following properties:

- the model elements involved in the relationship
- the direction for directed relationships
- the type of relationship if necessary
- with hierarchical relationships, which model elements are parents and which are sons

In the Innovator Object and Innovator Business editions, you have far-reaching configuration options for model elements. Templates are provided for relationships here. Read how to create templates for these relationships in chapter A-4.3.3, page A-93.

Number of Model Elements Involved

The simplest relationship–apart from recursive relationships, in which only one model element is involved–is that between two model elements. You can only set the type of relationship here, as well as–for directed relationships–the direction which the arrow should point.

You can also create relationships between more than two model elements in some diagram types. This depends on which meaning this construction has:

- For directed relationships (e.g. data flow in the SA diagram, call in the operation diagram), you always create one relationship from **one** source element to **several** target elements; this is because of the selection options. This means that you can e.g. easily create a split flow, but no merge -flow (you need to create a split flow and reverse the direction for this).
- You always set **one** parent element and **one or more** son elements for hierarchical relationship (e.g. generalization in a class diagram).
- Only enter the model elements involved for relationships of the same value (i.e. relationships which are neither directed nor hierarchical).

The order in which the model elements involved are selected plays an important role when creating relationships. You set the following upon selection of the first model element:

- The source element for directed relationships
- The parent element for hierarchical relationships

You select the target or son elements with all further selections.

Note

If more than one element is selected, you can change the primary selection by clicking on the element (without pressing the shift key) which you now want to be the primary selection.

The diagram must be locked during all of the following tasks.

How to proceed

To create a relationship between model elements:

» Open the diagram and lock it.

Note

Creating relationships is subject to certain prerequisites. If one or more of these conditions are not met then the relationship cannot be created. Read which conditions need to be met in the corresponding chapters of the Innovator editions.

Inserting Relationships

You will find all menu items which you can use to create corresponding relationships in the current diagram in the `Insert` menu. The menu items in the `Insert` menu are divided into additional submenus in some Innovator editions.

How to proceed

To create a relationship:

» Select
  - The source element for a directed relationship
  - The parent element for a hierarchical relationship
  - Any model elements involved for relationships of the same value
» Also select all further model elements which are involved in the relationship.
» Select the entry of the relationship which you want to create in the `Insert`– or the desired submenu.

  The selected model elements are linked by a line.
  - Directed relationships are shown by an arrow from the relationship first selected to the other linked model element/s.
  - For hierarchical relationships, the parent element is identified by the specific depiction of the relationship.

You can also create a recursive relationship or a relationship between two elements using the mouse. As described above, you do this by selecting a model element, clicking on the icon of the desired relationship, moving the mouse pointer with the rubber band over the element to which a relation-

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ship is to be created and clicking on this element. Model elements for which the conditions for creating a relationship are met, are marked in color when they are moved over with the mouse (as with the selection).

Reversing the Direction

The direction of the relationship is set by the order in which the two model elements are selected. You can still change this direction in most cases.

How to proceed

To reverse the direction:

» Select the relationship whose direction you want to change. Ensure that all segments of the relationship are selected.

» Select `Edit>Properties...`.
The dialog box of the same name appears. If you can reverse the direction, a group or a tab `Direction` exist.

» If applicable, select the tab `Direction`.
In the group box `Direction`, either an alternative is specified for each direction:
- option button `von <bish. Quellelement>`
- option button `zu <bish. Quellelement>`

Or an check box `Invert direction` is shown.

» If you want to exchange source and target elements, activate the option button `zu <bish. Quellelement>` or the check box `Invert direction`.

» If you want the relationship to flow in both directions, activate the option button `Bidirectional`.

» Close the dialog box with `[OK]`.
The dialog box closes, all selected relationships are reversed.

Linking Segments

You can link a relationship with a model element at a later date. This needs to be done individually for each segment. No segment of the relationship can already be linked with the new model element.

How to proceed

To link a segment with another model element:

» Select the segment which you wan to link with another model element.

» Also select the model element which you wan to link with the segment.

» Select `Edit>Reconnect`.
The segment is linked with the new model element.

Assigning a Relationship to a New Model Element

You can change an existing directed relationship between two model elements by entering another source or target element. To do this, however, the new model element must be of the same type as the previous one.

How to proceed

If you want to change a relationship's **source element**:

» Select the relationship and the model element which should be the new source element of the relationship.

» Select `Edit>Reconnect>Source`.
The selected model element becomes the relationship's source.

How to proceed

If you want to change a relationship's **target element**:

» Select the relationship and the model element which should be the new target element of the relationship.

» Select `Edit>Reconnect>Target`.
The selected model element becomes the relationship's target.

B-2.2.8 Copying Elements

You can copy most elements in your model and insert them again in another position. This seemingly simple procedure can have certain effects on your model which are perhaps not initially understood.

There are, in principle, three ways to reinsert:

- **Copy/Insert in the model browser**: You create a **new element** in the package which is selected. Only part of the information which is stored in the original element is transferred to the copy (e.g. if properties and attributes are transferred, diagram members and relationships to other elements are, however, lost).
- **Copy/Insert in the diagram**: You create a **new graphic existence** of the original element, i.e. add the model element. All information is preserved but can possibly be displayed differently from the original.
- **Creating/checking-in a version object**: You create a new element **including all its relationships and linked elements**. All necessary package paths and elements–relative to the package of the «systemModel» stereotype–are supplemented.

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Questions when Inserting

The effects when copying primarily apply to which details of a copied element should be inserted again.

- General:
  - How are the names of the elements dealt with? How is uniqueness ensured?
  - Should the package path be adopted?
- Model element:
  - Should the model element's components (e.g. attributes of a class, parameters of a call) be copied as well?
  - Which linked elements (e.g. assigned components of a class, decision tables of a process, refinement diagrams) should be copied as well?
- Diagrams:
  - Should the model elements be copied into the new diagram with all their properties or should just their name be created?
  - How are the relationships between the diagram's model elements treated?
- Packages:
  - Which part of the package's content is copied?

Example

In diagram A, the model elements a, b and c and their relationships to one another are displayed.

- Select the elements A, a and b in the model browser and copy them. **In the same** model/system model, select any package and insert elements (Edit>Paste>As New Element). The following elements are created:
  - a diagram A_1
  - Model elements a_1 and b_1

  In diagram A_1–as in the original diagram–the model elements a, b **and** c and their relationships which are visible there are displayed. The new model elements a_1 and b_1 exist, but are (still) not displayed in a diagram ("non-active members").

  It is sufficient to copy diagram A to achieve the same effect–though without "non-active members".
- In diagram A, select the model elements a and b and copy them. In the same model/system model, open another diagram and insert elements (Edit>Paste). The following elements are shown:
  - Model elements a and b (as other graphic display)
  - The relationship which was also shown in the original diagram
- Select the elements A, a and b in the model browser and copy them. **In another** model/system model, select a package from the «systemModel» stereotype and insert elements (Edit>Paste>Replace with Relations). The following elements are created:
  - A diagram A

- Model elements a, b **and** c
- All relationships which exist between the model elements a, b and c in the original system.

Read what to be aware of with these variants in section "Copying into Another Model", page B-48.

Note

When inserting elements you therefore need to check exactly which objective you are pursuing:

- **When creating new graphic displays of a model element within the same system model (by copying the model element in the diagram or by copying the diagram itself).**
- **When transferring all relationships of the copied elements in another system model (by copying the diagram and the model element which you want to display)**

Use the `As New Element` **or** `Replace with Relations` **menu item in the model browser accordingly.**

Copying within a Model

Within a system model it is sufficient to

- Use the simpler `As New Element` function in the model browser, as the relationships have to be created at a later stage in every case here.
- Use the familiar function `Paste` in the diagram, as you only create another graphic display in every case here.

Note

In most cases a model element can only be displayed once in a diagram. This means that another diagram normally has to be open to insert a model element. Ensure that the same diagram type concerned is used here.

How to proceed

To copy a model element in the model browser:

» Jump to themodel browser and select the package which contains the model element in the model tree.

» Select the desired element/s in the list of model elements.

» Select `Edit>Copy`. Select the package **in the same system model** which should contain the new model element. Select `Edit>Paste>As New Element`.

or

» Insert the selected element to the result region **of the same system model** using drag-and-drop.
The new model element is created and stored in the selected package. It contains the names of the original element, supplemented by a unique number throughout the models.

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How to proceed

To copy a model element in a diagram and to create a new graphic display in another diagram:

» Jump to the diagram and select the model element which you want to copy.
» Select `Edit>Copy`.
» Open the diagram where you want to insert the copied element into. Ensure that this diagram is from the same diagram type as that of the copied model element.
» Lock the diagram and select `Edit>Paste`.
The model element is added in the diagram.

Copying into Another Model

Whereas the simpler function `As New Element` within a system model normally has the desired effects, it can lead to completely unexpected side effects in another system model (model elements are created but not placed in relation to others). Therefore, use the function `Replace with Relations` for actions spanning various models.

Note

If you only copy one diagram using the function `Replace with Relations`, the copy also actually contains all model elements and relationships which are in the original. However, if these do not contain any information which exceeds pure graphics, then dependent elements (e.g. attributes) are lost.

How to proceed

To insert a model element and all of its relationships (cf version object) in another system model:

» Jump to themodel browser and select the package which contains the model element in the model tree.
» Select the model element in the list of model elements. If you also want to get the graphic depiction in another system model, select the diagram.
» Select `Edit>Copy`.
» Select the package–in the same or another model –from the «systemModel» stereotype under which the new model element should be stored, and select `Edit>Paste>Replace with Relations`.
The package path to the new element/s is created, provided it is not available. The model element and all other model elements which the original element has relationships to are created. If you also copied the diagram, this is also–in the correct package path too– created.

B-2.3 Changing Name and Packages of Elements

If you have created an element it normally has a default name and a set of default properties. You can also change names and properties at a later time.

The properties (apart from the name) which you can change respectively depend on the method and respective context. Read what to be aware of in the corresponding chapters of the Innovator editions. The following chapter deals with names and packages of elements.

B-2.3.1 Changing Names, Relationships and Declarations

The name is a property of most elements in Innovator. The name and, if applicable, the element's package path uniquely identify it within the model.

Rules for Name Specification

When specifying names, the following rules must be taken into consideration:

- If the global namespace is activated or preset in your model (see page B-64), the name must be unique within the model.
- The name always needs to be unique within its package.
- The name is not normally longer than 127 characters.

Special constraints also apply for some elements with regard to permissible characters. Read about this in the respective chapters of the Innovator editions.

Effect of Renaming on the Model Structure

Some elements in Innovator can be linked with others. This means that you can e.g. create a decision table or a refinement diagram for an SA diagram's process. Both elements are then linked with each other as they have the same names. If just one of the elements is renamed then this link is lost.

If you rename an element which is linked to other elements you need to decide whether the respective other element should be renamed or whether the link should be resolved.

If you rename a model element which has possible links, you can choose whether the name change only takes effect in the current diagram or whether the new name should also apply in other diagrams. You will come across particular junctions for the effect on name changes depending on diagram and element types.

The following options are distinguished between in SA diagrams:

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- `Selected <element type>`
  The model element's name is changed **exclusively in the current diagram.** In refined SA processes, the e.g. flow diagram which is linked with the process due to the names is not renamed. The link is also destroyed.
- `All corresponding <element types> in the model`
  The model element's name is changed **in all diagrams apart from the refinement diagram.** In refined SA processes, the e.g. respective flow diagram is not renamed. Assignment between the SA process and its refinement is also destroyed.
- `All corresponding <element types> in the model with refinement diagrams`
  The model element's name is changed **in all diagrams** e.g. also the name of the corresponding flow diagram for refined processes. This conforms to a pure name change without changing the structure.
- `Maintenance in Specifications, Tables and State Diagrams`
  The effect renaming has on other existences of the name can be determined by selecting references. In a process, the e.g. corresponding decision tables, as well as their activation, are renamed in the RT area. In a terminator, the time requirements table is renamed.

Renaming Elements–General

Elements are normally given a default name upon creation. You can rename each one of these elements afterwards. In some cases where the element is connected with others, if necessary, you need to take into consideration how they should be treated–whether they should also be renamed or whether the link should be renamed (see page B-49). Otherwise the usual constraints for names apply (see page B-49) and, if necessary, method-limited rules or syntax rules of a programming language.

You can basically rename an element in various positions:

- **In the model browser:** All elements which are shown in the model browser
- **In the diagram:** You can rename the diagram itself as well as all model elements here, as long as a name has been designated.
- **In tables:** Both the tables themselves and the model elements can be renamed here–as long as a model element is displayed.

The following prerequisites need to be fulfilled to be able to rename an element:

- The element must be locked by you.
- You need to have access rights to all elements which are linked with this one as they have the same names (see page A-3).
- If you rename an element using a diagram, the diagram also needs to be locked.

For model elements you need to take some side-effects which occur after renaming into consideration. For more information, read page B-52.

Note

If you have activated the package-local namespace in the Innovator Object or Innovator Business editions, you can use the check box `Prevent duplicate names` to set whether you want to receive a warning if the name already exists.

How to proceed

To rename an element (model element, diagram, package) **in the model browser**:

» If necessary, go to the model browser and open the package where the element is located.

» Select the element which you want to rename and lock it. Ensure that no other element is selected.

» Select `Element>Properties...`.
The dialog box of the same name appears. Read which rules for name specification to be aware of on page B-49.

» Enter a name in the from the field `Name` or select a name from the drop-down list `Name`.

» Close the dialog box with `[OK]`.
The selected element contains the new name.

How to proceed

To rename an element (model element, diagram, relationship) **in the diagram**:

» If necessary, go to the diagram which will display the element.

» Lock the diagram.

» If you
- Want to rename the diagram, click on a free point in the diagram.
- Want to rename a relationship (as long as a name is possible for a relationship), select the relationship–if necessary, using the relationship's selection point.
- Want to rename a model element, select it and lock it
- Want to rename another element (e.g. attribute of a class, parameter of a call), select the element

Ensure that no other element is selected in each case.

» Select `Edit>Properties...`.
The dialog box of the same name appears. Read which rules for name specification to be aware of on page B-49.

» Enter a name in the from the field `Name` or select a name from the drop-down list `Name`.

» Close the dialog box with `[OK]`.
The selected element contains the new name.

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Renaming Model Elements

You can rename model elements at a later date. Differentiations made between model elements which can contain refinement diagrams (SA process, activity) as to whether you rename the model element in the model browser or in the diagram:

- In the model browser, the model element is renamed, but not the refinement diagram (see page B-49).
- You can select which linked elements should be renamed too for linked elements in diagrams.

Note **In some diagrams, the size in which a model element is displayed is dependent from the length of the longest line of names. Read how to reduce the line length in chapter B-2.4.1, "Learning Wrapping Rules for Element Names in Models", page B-55.**

How to proceed

To rename a model element **in the model browser**:

» If necessary, go to the model browser and open the package where the element is located.

» Select the model element which you want to rename and lock it. Ensure that the element can have a name. Also ensure that only this model element is selected.

» Select `Element>Rename` or `Element>Properties...`.
The dialog box of the same name appears. Read which rules for name specification to be aware of on page B-49.

» Enter a name in the field `Name` or select a name from the drop-down list `Name`.

» Close the dialog box with `[OK]`.
The selected model element contains the new name. Links to refinement diagrams are resolved.

How to proceed

To rename a model element **in the diagram**:

» Lock the diagram.

» Select the model element which you want to rename. Ensure that only this model element is selected.

» Lock the model element.

» Select `Edit>Properties...`.
The dialog box of the same name appears. Read which rules for name specification to be aware of on page B-49.

» Enter a name in the field `Name` or select a name from the drop-down list `Name`.

» If necessary, use the junctions in the group box `Effect` to set whether the respective model element should also be renamed in other diagrams (see section "Effect of Renaming on the Model Structure", page B-49).

» f necessary, use the `Maintenance in specifications, tables and state diagram` check box to set whether the respective model element should also be renamed in other diagrams.

» Close the dialog box with `[OK]`.
The selected model element contains the new name. The effect renaming has is determined by the selected mode.

B-2.3.2 Moving Elements in Another Package

If you create an element, you can also set it owning package:

- If you create an element in the model browser, enter the package directly.
- If no redirection is configured (see page A-68) and the element is created e.g. via a diagram, the diagram's package becomes the element's owning package.
- If redirection is configured, the element is stored in the configured package.

You can move an element into another package at a later stage.

Note

You can only move elements into packages in which elements of the corresponding type are also permissible. Read about this in chapter A-3.4.1, "Setting Permissible Elements", page A-60.

How to proceed

To move an element into another package:

» If necessary, go to the model browser and open the package where the element is located.

» Select the element which you want to move into another package and lock it.

» Select `Edit>Move to...`.
The dialog box of the same name appears.

» If the desired new owning package is displayed, select it. Otherwise deactivate the check box `Current system model only`.
The packages which were not visible due to the filter are now displayed.

» If necessary, open the subtrees, select the new owning package and click on `[OK]`.
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» Move the element into the new owning package using drag-and-drop.
The element is moved to the new package.

B-2.3.3 Assigning Elements to Reference Packages

The elements in your model are stored in various packages according to certain criteria. In some cases many elements can be stored in one package. As you will maybe won't need all of these elements at the same time, you can store a selection of elements in so-called reference packages without destroying your model's structure: Assign the elements to a reference package which you have easy access to using the access dependency (see page A-48) to enable you to comfortably work with the selection necessary at the time.

Note

You can only reference elements into packages in which elements of the corresponding type are also permissible. Read about this in chapter A-3.4.1, "Setting Permissible Elements", page A-60.

You cannot assign packages themselves to a reference package.

Constraining the Application of Reference Packages

If an element is also stored in reference packages you can carry out practically all tasks which you can also carry out in the "original" elements; this is because elements in reference packages ultimately show a different view of the "original" element.

However, you cannot import reference packages in another package (see page A-48) and, in doing so, reduce the file paths to this package's elements (see chapter B-2.6, page B-64). To do this, elements actually have to exist in the package which you import.

How to proceed

To additionally store elements in a reference package:

» If necessary, go to the model browser and open the package where the element is stored.

» Select the elements which you also want to store in the reference package in the list of model elements. Ensure that there are no packages under the selected element.

» Select `Edit>Create Reference in...`.
The dialog box of the same name appears.

» If the desired reference package is displayed, select it. Otherwise deactivate the check box `Current system model only`.
The packages which were not visible due to the filter are now displayed.

» If necessary, open the subtrees, select the reference package and click on `[OK]`.

or

» Add the elements to the reference package using drag-and-drop.
The selected elements are additionally shown in the reference package. Read how to enable direct access to elements in this package using the access dependency and, in doing so, avoid a long-winded navigation through the model tree in chapter A-3.2.3, "Producing Relationships Between Packages", page A-48.

B-2.4 Wrapping Names of Elements

The name of a text element needs to be wrapped to be depicted in diagrams or tables; this achieves a satisfactory visual result.

To control wrapping of element names you can make general settings and use special wrapping lists for targeted name wrapping.

Controlling Options for Wrapping

You can use the following controlling options for wrapping element names:

- General settings (see page B-55)
- Wrapping lists for targeted wrapping (see page B-58)

B-2.4.1 Learning Wrapping Rules for Element Names in Models

If model elements do not fit within the existing available frame of the element, then need to be wrapped. This happens according to the following strategy.

General Wrapping Rules

Wraps can occur at spaces and before and after special characters.

- Example: "Service-oriented" can be wrapped if there is another room to become

  "Service-"
  "oriented"

  or

  "Service"
  "-oriented"
- Example: "Create account" can be wrapped to

  "Create"
  "account"

A wrap character is inserted at the wrapping point between the letters or between letters and digits; this shows that the separated components do actually belong to each other.

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Wrapping can occur before a word component which starts with a capital letter and is followed by a small-case letter.

- Example: "ERMEntity" can be wrapped to

  "ERM-"(automatically inserted wrap character)
  "Entity"

Individually Setting Wraps

Word components made up of at least four letters which cannot be split according to the general wrapping rules are split corresponding to the model element-based wrapping point. You can set this in the global wrap list, `inowrap.txt`, or model-specific in diagrams and tables using the `Extras> Edit Word Wraps...` menu item (see page B-58).

The wrapping point of the model element name is utilized in the following form for the wrap. The global and model-specific wrapping lists are always searched through first for the entire word and upon an unsuccessful search, the word component is then searched for and, if necessary, the wrapping specification is used. The wrap character can also enable a wrap before and after words. If there are individually characters between wrap characters because of the combination of various word components, no wrap character is set to the left of the individual character.

You can use the wrapping specifications which you have already met in global or model-specific wrap list in the dialog box `Extras/Edit Word Wraps` with the `[Default]` button.

- Example: "Administration"

  If you have set the following decomposition in the global or model-specific wrap list for various word components

  "-ad-min-"
  "-is-trat-"
  "-ion-"

  then the following wrap characters will be inserted when you clock on the `[Default]` button for "Administration"

  "-Ad-min-is-trat-ion-"

Concrete Wrap in a Frame

If the above wrap rules and specifications do not produce a suitable wrapping point in precise cases then the maximum length is generated from the model options. These are set with the menu item `Model>Configuration>General Settings...` (see page B-57).

- Example for wrap designation in a longer word:

  "Transfer_Kind_ExtPost"

  can potentially be wrapped at these points

  "Transfer-" (maximum length here: 8 characters; automatic wrap character)
  "_"
  "_" (special character)
  "Kind" (beginning of word)

"_" (special character)
"Ext-" (beginning of word; automatic wrap character)
"Post" (beginning of word)

Words will of course not be wrapped any more than is necessary.

Setting the Maximum Length of a String

If none of the rules mentioned above are applicable, the word to be wrapped will be wrapped after a certain amount of characters. This number is dependent on the diagram types.

The following settings are recommended for the field `Maximum length`:

Edition	Maximum Length
Business	0
Function	> The longest string length from the wrapping list without separators

Note

The length of some model elements in diagrams–e.g. processes in SA diagrams– are specified by the length of inseparable parts of the name. If you have given a very large value or entered zero in the field `Maximum length`, these model elements will probably adopt undesired sizes in your diagram, which will also alter the position of other elements.

How to proceed

To set the maximum amount of characters for the model:

» Jump to the model browser and log-in as administrator (see chapter A-1.2.1, page A-5).

» Select `Model>Configuration>General Settings...`.
The dialog box of the same name appears.

» Select the tab `Wraps`.
Set the maximum length of characters in a string before it is wrapped, as long as no other rules are applicable in the field `Maximum length`. This number is dependent on the diagram types. (See above)

» Enter an integer in the field `Maximum length`.

» Finally, close the dialog box with `[OK]`.
All names in the model are wrapped at the set point, if applicable.

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B-2.4.2 Using Wrapping Lists for Targeted Wrapping

General

As very specialized terms are normally used in Innovator models, it can be highly problematic to integrate a general hyphenation program or general word lists with wrapping information.

As well as the general, model-wide adjustable wrapping rules, Innovator also manages user-defined wrapping lists for influencing the wrapping algorithm for displaying element names in diagrams and tables.

Managing Wrapping Lists

Innovator supports two types of wrapping lists:

- A global wrapping list in the form of a special file and
- An internal model-specific wrapping list

Both the general, model-wide wrapping settings which are made and this wrapping list are taken into consideration when displaying names in diagrams and tables. The internal model-specific wrapping list and is initially searched through to find set wrapping points and then the global wrapping list is searched.

Global Wrapping List

The global wrapping list applies for all repositories. It should be included in a company in the terminology used in context with Innovator and this should be available as a common glossary with set wrapping points. It is stored in the `$INODIR` directory under the file name `inowrap.txt`.

Note

The global wrapping list can not be edited using Innovator interfaces, as modifications made to the display has an effect on all diagrams and tables of all models in all repositories.

You can use all terms whose wrap you want to control in a language-independent way in the wrapping list. the global wrapping list has one word per line. You can set the wrapping points of a word using the '-' character. This wrap character is not a word component–as opposed to the '-' characters which are entered directly into the element name.

Example extract from a wrapping list file:

```
Sales-rep-resent-ative
Competence-Group
Product-Direc-tory
Subject-Matter-Authori-zation
Insur-ance-Policy
```

You can have virtually any number of wraps in the wrapping list. Wrapping lists with approx. 70,000 entries have been tested without any noteworthy loss of performance.

When importing, all entries in the wrapping list which:

- Are not made up of precisely one word or

- Do not have wrap characters
- Include less than 4 characters

Only the first wrap character is observed for entries which are accidently given twice.

How to proceed

To expand the global wrapping list:

» Open the `inowrap.txt` file in the `$INODIR` directory using the ASCII text editor.

» Enter the words whose wraps you want to set each individually in a line. Set the wrapping points by inserting the '-' character.

» Save the changes and close the file.

The global wrapping list `inowrap.txt` will be imported when a repository is started. Changes therefore only have an effect when a repository is started. If a model contains a term from the global wrapping list, this is–if necessary–wrapped at the defined position.

Model-Specific Wrapping List

When expanding the global wrapping list, a model-specific wrapping list is managed by the system for terms which are specially used within a model. This internal wrapping list cannot be seen by the user, but is automatically maintained by setting and resetting wrapping points in the model element name and saved in the model. Wrapping list entries which are already set in the global wrapping list are not saved in the model-specific wrapping list.

You can set and reset wrapping points in the model element name in a dialog box in the dialog or table editors; this alphabetically lists all words in the selected element's names. If nothing is selected, all words in the diagram or table are listed.

Words in the global wrapping list appear in color. These wrapping list entries cannot be modified here.

You can select elements in the diagram or table, but not in the model tree, as the effects are not visible there.

You can insert the wrap character '-' for the targeted wrap for the listed words which do not appear in the global wrapping list. The wrap characters are not word components.

The dialog box is not modal. Selection of elements cannot be changed if they remain open. This enables you to check the graphic effects.

How to proceed

To expand the model-specific wrapping list:

» Open the diagram or table whose model-specific wrapping list you want to expand.

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» Select Extras>Edit Word Wraps....
The dialog box of the same name appears.

» Select the element in the diagram or the table whose name you want to insert or remove wrapping points for.
Respectively, all words in the name of the selected element are alphabetically listed in the dialog box Extras/Edit Word Wraps. Words in the global wrapping list appear in color. These wrapping list entries can only be modified in the global wrapping list.

» Set the insertion point in the dialog box Extras/Edit Word Wraps. Position it where you want to make the wrap and insert or remove the wrap character '-'.

» Clock on [Apply] to check the wrapping points in the diagram or the table.
if necessary, select other elements whose name you want to assign model-specific wrapping points to.

» Click on [Close] to end the procedure.
The model-specific wrapping list is stored in the model.

A model-specific wrapping list can be exported as a file so that it can be integrated into the global wrapping list.

Showing Model-Specific Wrapping Lists

You can show all of a model's model-specific wraps in the Innovator text editor; you can do this to decide whether you wan to adopt these wraps in the global wrapping list.

How to proceed

To show a model's model-specific wraps:

» If necessary, go to the model browser and log-in as administrator (see chapter A-1.2.1, page A-5).

» Select Model>Word Wraps>Show in Text Editor.
All wraps set in the model are shown in the Innovator text editor.

Adopting Model-Specific Wrapping Lists in Global Wrapping Lists

You can adopt model-specific wrapping lists in the global wrapping list. To do this, export the model-specific wrapping list from the respective model into a separate file (**not** inowrap.txt!) and join it with the global wrapping list.

How to proceed

To export the model-specific wrapping list:

» If necessary, go to the model browser and log-in as administrator (see chapter A-1.2.1, page A-5).

» Select `Model>Word Wraps>Export...`.
  The dialog box of the same name appears.
» Enter the directory and the file name for the file to be exported.
  If you select a file which already exists you will be asked whether you want to overwrite this.
  All wraps set in the model are exported.

You can now use the model-specific wrapping list in the global wrapping list.

The global wrapping list is stored in the `$INODIR` directory under the file name `inowrap.txt`.

How to proceed

To join the model-specific wraps with the global wrapping list:

» Open the `inowrap.txt` global wrapping list and the exported file with the model-specific wraps in an ASCII text editor.
» Insert all characters or selected lines of the model-specific wraps in the global wrapping list.
  The following step is not mandatory, however, sorting into alphabetical order will make it easier to search for a name.
» Alphabetically sort the expanded global wrapping list and correct any possible double entries.
» Save the `inowrap.txt` global wrapping list again in the `$INODIR` directory.
  The expanded global wrapping list is now available.

B-2.5 Removing and Deleting Elements

Innovator differentiates between the logical and graphic existences of a model elements (see page B-22). If you no longer need a model element, you need to decide whether you only want to remove one of its graphical existences (e.g. from a diagram) or whether you want to completely delete the model element from the model.

You can normally only delete relationships between model elements, i.e. completely remove them from the model. In some cases however, relationships–as with model elements–can be displayed in various diagrams or not in any. In these cases you also need to decide whether you only want to remove the relationship from the current diagram or delete it from the entire model.

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You can delete (not remove) elements in both the model browser and in a diagram. On the other hand, you can normally only remove (not delete) an element in diagrams. However, if you have assigned an element to another package using a package reference in the model browser, you can also use the command to execute the delete here (see page A-60).

Note **Deleting of elements cannot be undone!**

Locking Diagrams and Elements

Depending on whether you want to delete or remove an element, you need to arrange for:

- **Deleting**
  - To delete an element (model element or relationship) in a diagram, both the diagram and the model element need to be locked in all cases.
  - To delete an element (model element, diagram, package) in the model browser, only the model element needs to be locked. Neither the owning nor the referenced package need to be locked. However, this package cannot be locked by another user.
  - In this case, you need to have access rights to all diagrams which the model element will be displayed in.
- **Removing**
  - To remove an element (model element or relationship) in a diagram, the diagram needs to be locked in all cases. The model element doesn't need to be locked.
  - To remove the reference to an element (model element, diagram) in the model browser, you need to have access to the element. Neither the owning nor the referenced package need to be locked.

B-2.5.1 Using Deletion Control

When deleting or removing elements, other elements could be affected by the action. This means that e.g. relationships between model elements are also removed or even deleted if one of the model elements involved is now longer displayed.

As deleting or removing of an element cannot be undone it is necessary to have a control option, which elements are affected by the action, to be able to decide whether you really want to delete the elements.

You can set up your system in such a way that it shows a list of all affected elements when deleting or removing. If an element which you don't want to delete or remove is in this list then you can still cancel the entire procedure.

Note

You cannot remove individual elements from the list. You can only delete/remove all or no elements.

This can make this setting individually for the model browser, as well as for every diagram and table type.

You can select whether the list of affected elements should be contained in a dialog box or in an information window.

How to proceed

To set the deletion control:

» Got to the editor (diagram, table or model browser) whose elements you want to set the deletion control.

» Select `Extras>Options...`.
The dialog box of the same name appears.

» Select the `General` tab in the `Delete Control` line in the `Value` drop-down list.
- `List to Dialog` if you want the list of elements in a dialog box
- `List to Information Window` if you want the list of elements in an information window
- `Off` if you don't want any deletion control

» Click on `[Apply]`.

» Close the dialog box with `[OK]`.
In all editions of the current type you only get a list of elements which are affected by the deleting or removing process.

B-2.5.2 Removing Elements

If you remove an element from the current diagram or the current package, it remains in the model and, if applicable, in other diagrams.

How to proceed

To remove an element:

» If necessary, jump to the diagram and lock it.

» Select the elements you want to remove.

» Select `Edit>Remove from Diagram`.
If the deletion control is turned on (see page B-62), the dialog box of the same name appears. All elements which are deleted by the action are listed.

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» Check whether you really want to remove the elements. If necessary, cancel the procedure with [Cancel].

» Otherwise, close the dialog box with [OK].
The model elements and all relationships linked to them are removed from the diagram.

B-2.5.3 Deleting Elements

When deleting, elements are removed from the model and therefore also from all diagrams which they are used in.

How to proceed

To delete elements:

» Select the elements which you want to delete in the diagram or model browser.

» If necessary, lock the diagram and all selected elements.

» Select Edit>Delete.
If the deletion control is turned on, the dialog box of the same name appears. All elements which are listed are deleted by the action.

» Check whether you really want to delete the elements. If necessary, cancel the procedure with [Cancel].

» Otherwise, close the dialog box with [OK].
The elements and all of the relationships link to them are deleted.

B-2.6 Reducing File Path Components Using Namespaces

If you reference a model element, i.e. connect a relationship from somewhere in the model, enter (at the very least) its name. Innovator then produces a relationship between the current element and the referenced element. If you e.g. rename the referenced element or move it to another package at a later date, this change is also recognized in the referenced element and correspondingly reproduced.

Example In the Innovator Object edition's class diagram, enter its type for an a attribute from the A class–i.e. the name of another B class: Reference the B class (UML syntax: a:B).

Global Namespace

In global namespace, the names of elements of the same type need to be unique throughout the models. This means that file paths are never necessary if you want to reference an element in another package. Due to the element name, Innovator will always know which position the element can be found at within the model.

The global namespace is always set in the Innovator Function or Innovator Data editions. Whereas in the Innovator Object and Innovator Business editions, you can choose between global or package-local namespaces.

Note

If you are working with the Innovator Function or Innovator Data editions, you cannot use the functions for namespaces.

Package-Local Namespace

In the Innovator Object and Innovator Business editions, you can also activate the package-local namespace. This means that element names only have to be unique within a package. Each package therefore forms a closed namespace. This means that you can normally only reference elements within the same package without entering an exact package path–i.e. the sequence of its parent package. If however you reference elements which are stored in another package, you must enter the package path so that the reference can be successfully resolved.

Innovator provides various mechanisms to enable the shortest possible file paths or even makes them superfluous in both of these Innovator editions as well. The following chapter deals with namespaces in the Innovator Object and Innovator Business editions, as well as functions which you can use in this context:

- Various elements of the same type can have the same name, as long as they are not stored in the same package.
- You can separate subtrees from your model and, in doing so, limit the length of the file paths to the top-most package of this subtree.
- If you enter an element name for a reference which exists several times in the model or subtree, Innovator suggests a possible candidate for you to choose from.
- Depending on the programming language used, if applicable, elements can also be referenced in the parent package without a file path.
- You can incorporate elements of another package in the namespace of the current package using dependencies between packages and, in doing so, extend the namespace.

Automatic Namespaces

In the package-local namespace, Innovator generates a new namespace with each package you create. All elements of the same type which you create in this package need to have a unique name within the package. You can therefore reference elements within a package without the need for a file path.

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If you create classes in Innovator Object edition which you want to use at a later date for generating program code, you need to enter which programming language the code should be created in. Here, Innovator takes the properties of the various programming languages supported into consideration.

- **Languages with a non-hierarchical namespace:** this programming language can only reference classes in its own package/namespace (without file path) (e.g. Java). References to elements outside of the current package need to be activated by dependencies to these packages.
- **Languages with a hierarchical namespace:** this programming language can also reference classes in parent packages. File paths can omitted for unique names without modeling dependencies (e.g. C++).

You can also set which areas (subtrees) you want to stipulate uniqueness of element names for. Innovator will signal if name conflicts within this area occur accordingly.

B-2.6.1 Activating and Deactivating the Use of Namespaces

In the editions Innovator Object and Innovator Business, you can decide whether your entire model should be a unique namespace (global namespace) or whether you want to permit various namespaces (package-local namespace).

Note **You should make this decision as early as possible, ideally when creating a model. Changing it at a later date can make for necessary complex re-working.**

How to proceed

To change between global and package-local namespaces, you need administrator rights:

» Jump to the model browser and log-in as administrator (see chapter A-1.2.1, page A-5).

» Select `Model>Configuration>General Settings...`.
The dialog box of the same name appears.

» If applicable, go to the tab `Namespaces`.

» To activate the package-local namespace, activate the option button `In package` in the group box `Names unique`.

» To activate the global namespace, activate the option button `In model` in the group box `Names unique`.

» Close the dialog box with `[OK]`.

B-2.6.2 Differentiating between File Paths

If you reference another element you need to enter which package the element is in in the package-local namespace (e.g. for types from class attributes). If you create such a reference you can either enter the required file or select the desired target element using dialog boxes.

Note

If Innovator could resolve a reference at one point, this relationship is adhered, even if e.g. you rename or move the target element.

Innovator differentiates between three ways to enter package paths:

- Unqualified reference
- Fully-qualified reference (see page B-68)
- Partially-qualified reference (see page B-68)

Depending on which project language you set as the primary language, Innovator naturally shows or shortens the file path according to the project language's requirements.

Unqualified File Paths

Only enter the name of an element. If this name is unique within the namespace, Innovator can resolve the reference.

Example: Element `E2` references element `E1`.

- For languages with a non-hierarchical reference (see page B-65) unqualified file paths are sufficient to find `E1` in package `P1_1`. Whereas– without file paths–the element `E1` cannot be referenced in the package `P1`.

- On the other hand, both `E1` elements can be referenced without file paths for languages with hierarchical references. Due to the collision of names, however, the path component to `P1` needs to be entered.

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If the name is not unique, Innovator uses the element which the current package sets next for unqualified references.

Note **You can also use unqualified references for elements in other packages. This means that the import dependency needs to be available between the affected packages (see chapter A-3.2.3, "Producing Relationships Between Packages", page A-48).**

Fully-Qualified and Partially-Qualified File Paths

You can assign the additional property, `topLevel`, to packages. The package path therefore becomes an independent subtree below this toplevel package (see chapter B-2.6.5, page B-72).

For fully-qualified references, the entire package path of all parent packages affected is entered–i.e. up until the first toplevel package.

Two types of fully-qualified references are distinguished between:

- **Full-qualification which spans all models:** this is the only unique file path which spans all models. It always contains the entire path component from the model's root package to the referenced element.

  As the top-most level of you package structure normally only serves as an organizational structure of your model and is therefore not relevant for later implementation, this type of full-qualification is not be addressed.
- **Full-qualification for subtrees:** If you enter a path component for a reference, Innovator searches for it below all (visible) toplevel packages.

  This type of full-qualification has the advantage over full-qualification which spans all models, that you can move the entire subtree within the model without the references within the subtree needing to be recalculated.

Note **Languages with hierarchical references can also search for references in the parent package of the current package. For these cases, Innovator independently shortens the complete file path to the shortest possible length. This shortened full-qualification is also referred to as a partial-qualification.**

Example of full-qualification: Element `E1` in the `P1_1` package references element `E2` in the `P2_1` package.

The element `E2` needs to be entered with the complete path component– beginning **underneath** the first top-level package (`P` in the example).

Example of partial-qualification: Element `E1` in the `P1_1` package references element `E2` in the `P1_2` package.

- Languages with non-hierarchical references (see page B-65) also need to be fully-qualified here.

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- Languages with hierarchical references, however, can also be searched for in the parent package: This means that it is sufficient to enter the package's file which contains the target element.

Note **If the same package structure exists under various top-level packages, you need to enter which top-level package you are referring to when referencing this path component. To do this, use the resolve dependency (see chapter A-3.2.3, "Producing Relationships Between Packages", page A-48).**

B-2.6.3 Viewing Path Components in References

If you–e.g. for attributes and methods–elements (here, classes) from other packages, the package path of this element is not shown as standard. You can activate the path component.

Activating Path Components

For attributes and methods, you can set the package path of the referenced class to be shown next to the name and the type of attribute. The setting is already provided in display templates which are stored for your model. You can change this setting for all attributes of a class at the same time at a later date.

How to proceed

To display the class' path component:

» Lock the class diagram.

» Select the class in the diagram with whose attributes or methods you want to activate the path component for and lock it as well.

» Select `View>Display Options...`.
The dialog box of the same name appears.

» For attributes, select the tab `Attribute`, for methods, select the tab `Method`.

» Activate the check box `Show types with scope` and close the dialog box with `[OK]`.
The path component of the referenced classes is shown in the type specification.

B-2.6.4 Setting Requirements for Uniqueness of Names and Path Components

In the global namespace, element names need to be unique throughout the models (exception: package names only need to be unique within the same parent package). You cannot influence the request for uniqueness.

If, on the other hand, you have activated the package-local namespace (see page B-66), the package is the smallest area, within which the names of elements of the same type must be unique. Innovator always prevents a second element of the same type and name being created in a package. This rule cannot be avoided.

However, you can enlarge the area which Innovator checks for the uniqueness of names and, if applicable, reports conflicts. If this message appears, you can decide whether you want to use another name or whether you want to keep the same name.

Enlarging the Area with Unique Names

If you want to enlarge the area which reports names which are the same in the package-local namespace, you can choose between the following area sizes:

- `Never`: two elements of the same type can have the same name, as long as they are not stored in the same package. No warning is created.
- `Same system model`: if a parent package contains the «systemModel» stereotype and an element with the same name already exists in it, a warning is created.
- `Complete model`: if an element with the same name exists in the model, a warning is created.

Note

Even if you get a message stating that the element name is not unique because of the settings shown above, you can still create or rename the element in the diagram (not in model browser).

However, if you want to create a second element with the same name in the package, this is prevented.

How to proceed

To enlarge the area which Innovator should check for the uniqueness of element names, you need administrator rights:

» Jump to the model browser and log-in as administrator (see chapter A-1.2.1, page A-5).

» Select `Model>Configuration>General Settings...`.
The dialog box of the same name appears.

» Select the tab `Namespaces`.
The junctions are shown in the group box `Prevent duplicate names` if warnings should be created.

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» Activate the alternatives with the desired group and close the dialog box with [OK].

B-2.6.5 Defining Subtrees

You can define subtrees within your model by assigning the topLevel property to the top-most package of the subtree. To do this, create an independent subtree underneath this package. The package limits its namespace upwards. In doing this, you create visibility limits from both within the sub-system to the elements outside of the sub-system and from outside to elements within the sub-system.

You can set whether fully-qualified file paths–as long as they use packages with this property–should begin within the subtree at the top-level package or at the root package of the model (see section "Simplifying Resolve Dependency to Own Top-Level Tree", page B-73).

You can assign the topLevel property to a package in both the model browser and in a package diagram.

How to proceed

To define a package as a top-level package:

» Go to the model browser and select the package which you want to assign the topLevel property to in the model tree. Or go to the package diagram which contains the package and select the package there.

» If necessary, lock the package and select Element>Properties.... The dialog box of the same name appears.

» Select the tab Element Properties.

» Select the topLevel entry in the column Name and set it to ja.

» Close the dialog box with [OK].

B-2.6.6 Extending and Limiting Namespaces

Innovator provides various dependencies between packages, which enable you to reference elements outside of the current namespace without always having to enter the entire package path. The following dependency types are relevant for use of namespaces:

- **Import dependency:** this dependency enables elements of another package to be imported in the own namespace and thereby unqualified to be referenced.

If you have e.g. stored your model's classes according to certain criteria in various packages, you can import one of these packages into your current one if necessary and, in doing so, carry out unqualified referencing in the classes which are stored in it.

Note

Elements which you have assigned reference packages to (e.g. packages of the «facade» stereotype) cannot be referenced in an unqualified way using the import dependency.

- **Resolve dependency:** only use this dependency if you are working with top-level packages. This ensures that precisely those file paths which could potentially exist in various subtrees and which are specified by a Resolve dependency are used.

Set all dependency types in the package diagram (see chapter A-3.2.3, "Producing Relationships Between Packages", page A-48). You can also model the Import dependency in class or component diagrams.

Simplifying Resolve Dependency to Own Top-Level Tree

You can use the Resolve dependency to resolve element names, also across the limits set by the top-level packages.

However, these packages which are above the referenced element, i.e. which are stored in its own top-level tree, are still not visible. This means that each individual top-level package needs to have its own Resolve dependency to its subordinate packages.

Innovator provides the possibility to automatically create this Resolve dependency within a top-level tree.

Note

The function is only available if the global namespace is deactivated (see page B-66).

How to proceed

To automatically resolve names within its own top-level tree:

» Jump to the model browser and log-in as administrator (see chapter A-1.2.1, page A-5).

» Select `Model>Configuration>General Settings...`.
The dialog box of the same name appears.

» Select the tab `Namespaces`.
The check box `Resolve names in referencing toplevel tree` can only be used if the option button `In package` is activated in the `group box Names unique`, i.e. the package-local namespace is activated (see page B-66).

» To copy Resolve dependencies within its own top-level tree, activate the check box `Resolve names in referencing toplevel tree`.

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» Close the dialog box with [OK].

B-2.6.7 Using Standard Dialog Boxes for Selecting Elements

You will have set whether you will directly enter an individual element or select one and/or various elements before making the selection in the most varied of situations. The following standard dialog boxes are available for this purpose:

- dialog box Paket auswählen (see page B-77)
- dialog box Pakete auswählen (see page B-77)
- dialog box Choose Item (see page B-78)
- dialog box Choose Item (see page B-78)

These standard dialog boxes are also used for assigning model elements to certain namespaces. You can have various titles depending on the menu item opened (e.g. dialog box <Element Type>/Add Existing).

Note **There are various ways to open these dialog boxes (e.g. using the [Select] button in various Innovator dialog boxes). The following descriptions assume that you have opened one of the dialog boxes mentioned above.**

It is common all dialog boxes listed above show part of the package structure. You can therefore easily select the package if you know which one contains the element you are looking for.

If you do not know the package path you can enter a text sample and consecutively view all the elements which correspond to the text sample.

You can set which elements you can see in your model and which ones you can't using various mechanisms. You can deactivate these mechanisms in the standard dialog boxes–with certain constraints.

Enlarging the Limited Visibility Area

If you open one of the standard dialog boxes, the current package is selected in the tree and the complete package path to this package is visible.

Note **Which package element types should be stored in upon creation can be configured throughout the models (see chapter A-3.4.4, "Redirecting Elements once Created in a Certain Package", page A-68). If this is the case for the current element type, the package which you opened the dialog box from is not selected, but the one which is configured for the element type is selected instead.**

Which other packages are visible from here can be limited in various ways. You can deactivate some of these constraints in the standard dialog boxes:

- `Current system model only`
  Your complete model is normally in a package which contains the «systemModel» stereotype. In some cases however, more than one of such packages exist, e.g. if you want to manage various variants of a model within a model tree.

  You can use the dialog boxes to set whether only the current system model or other system models or their branches as well should be shown in the tree.
- `Show references`
  Apart from the elements which are actually available in it, a package can also contain only references to elements (see chapter A-3.4, page A-60, or chapter B-2.3.3, page B-54).

  You can use the standard dialog boxes (not in `Paket auswählen`) to set whether only elements which are actually stored in this package should be shown for a selected package or whether those which are integrated into the package by a reference should also be shown.
- `With «access» dependency only`
  (only in Innovator Object and Innovator Business)
  You can control which elements you have access to in your model using certain dependencies between packages. You can only use dialog boxes to select elements from packages which are linked by an Access dependency with your current package (see chapter A-3.2.3, "Producing Relationships Between Packages", page A-48).

  You can use the standard dialog boxes to set whether only packages which you have this kind of access to can be shown in the group box `Namespaces` or whether this constraint should be ignored.
- `Show imported items`
  (only in Innovator Object and Innovator Business)
  If you are working in the current model with a package-local namespace, you can import elements from other packages into the current namespace using the Import dependency; this shortens the package path.

  You can use the standard dialog boxes (not in `Paket auswählen`) to set whether only elements which are actually stored in this package should be shown for a selected package or whether those which are integrated into the package by an Import dependency should also be shown.
- `Show ´public´ items only`
  (only in Innovator Object and Innovator Business)
  You can set whether only elements which contain the «public» value for `Sichtbarkeit` property should be shown for selected packages or whether those with other visibilities should also be shown.

Note

In the Innovator Object and Innovator Business editions, you can set how extensively the visibility area should be limited by as standard if the dialog boxes are open (see page B-79).

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Other restrictions which limit the visibility area (e.g. due to programming language used) cannot be influenced in the dialog boxes.

How to proceed

To enlarge the visibility area of packages in the tree:

» Deactivate the check box `With «access» dependency only` if packages which are not linked with the current package using the Access dependency should also be shown (only Innovator Object and Innovator Business editions).

» Deactivate the check box `Current system model only` if packages which are stored in another system should be shown.

The required packages are shown as long as no other constraints exist.

How to proceed

To influence the way contents is supplied for the selected package:

» Deactivate the check box `Show imported items` if Import dependencies from packages should not be taken into consideration.

» Deactivate the check box `Show ´public´ items only` if elements with another visibility should also be shown.

» Deactivate the check box `Show references` if referenced elements should also be shown.

Searching for Elements

You can enter a text sample in all standard dialog boxes and filter all packages which either correspond to the text sample or contain elements which correspond to the text sample one after the other in the tree.

Note

Case sensitivity must be taken into consideration when entering a text sample.

Read how to configure the search criteria in chapter B-3.3, "Searching for Strings using Text Samples", page B-95.

How to proceed

To show all packages which correspond to the search criteria or contain suitable elements one after another:

» If necessary, enlarge the visibility area (see page B-74).

» Enter the search criteria in the field `Name`. If necessary, use wildcards and regular expressions (see page B-95).

» Click on [Find].
  If you are looking for a package, the first package which corresponds to the search criteria is selected in the tree. If you search for another element, the first suitable on in the table Items in namespace is selected.
» Click on [Find] as many times as necessary under you find the package or element you are looking for.
» Close the dialog box with [OK] to transfer the search result to the previous dialog box.

Selecting Individual Packages

In all Innovator editions, you can refer to a special package for further editing using the dialog box Paket auswählen (e.g. to move an element in this package, see page B-53).

How to proceed

To select a package using the dialog box Paket auswählen:

» If necessary, enlarge the visibility area in the tree (see page B-74).
  The packages which were not visible due to the filter are now displayed.
» Use the dialog box's search function (see page B-76)
  or
» Open the package hierarchy's branches in the tree and click on the package which you want to select.
» Close the dialog box with [OK].
  The name of the package is displayed in the dialog box which you opened in the dialog box Paket auswählen.

Selecting Various Packages

In some cases, you can select various packages at the same time and edit them at the same time (e.g. when adding packages in the package diagram). In these cases, the dialog box Pakete auswählen will appear.

How to proceed

To select various packages at the same time using the dialog box Pakete auswählen:

» If necessary, enlarge the visibility area in the group box Namespaces (see page B-74).
  The packages which were not visible due to the filter are now displayed.
» Use the dialog box's search function (see page B-76)
  or
» Open the package hierarchy's branches in the tree and click on one of the packages which you want to select.
  The [Add] button is activated.

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» Transfer the package to the list box `Selected` using `[Add]`.

» Repeat this for all packages you want to select and close the dialog box with `[OK]`.

Selecting Individual Elements

If you want to select an element within a package and not search for a package, the dialog box `Choose Item` will appear (e.g. when assigning an instance to another class in the Innovator Object edition).

How to proceed

To select an individual element using the dialog box `Choose Item`:

» If necessary, enlarge the visibility area in the tree (see page B-74).
The packages which were not visible due to the filter are now displayed.

» Use the dialog box's search function (see page B-76)

or

» Open the package hierarchy's branches in the tree and click on the package which contains the desired element or one of them.
All elements which are stored in this package are listed in the table `Items in namespace`.

» Select the desired element in the table `Items in namespace` and close the dialog box with `[OK]`.
The name of the element is displayed in the dialog box which you opened in the dialog box `Choose Item`.

Selecting Various Elements

In some cases, you can select various elements at the same time and edit them at the same time (e.g. when adding classes in the class diagram in the Innovator Object edition). In these cases, the dialog box `Choose Item` will appear. You can selected various elements from a number of packages at the same time here.

How to proceed

To select various elements at the same time using the dialog box `Choose Item`:

» If necessary, enlarge the visibility area in the group box `Items in namespace` (see page B-74).
The packages which were not visible due to the filter are now displayed.

» Use the dialog box's search function (see page B-76)

or

» Open the package hierarchy's branches in the group box `Items in namespace` and click on the package which contains the desired element or one of them.
  All elements which are the same element type as the one you are searching for are shown in the table `Items in namespace`.
» Select the element/s in the table `Items in namespace` and transfer it/them to the table `Selected items` by clicking on `[Add]`.
» Repeat this for all packages whose elements you want to select and close the dialog box with `[OK]`.

Setting the Check Boxes Pre-Allocation

In the Innovator Object and Innovator Business editions, if one of the standard dialog boxes is open you can set whether the check boxes for limiting the visibility area should be activated or deactivated for the entire model.

How to proceed

To set the pre-allocation of the check boxes in the default selection dialog:

» Jump to the model browser and log-in as administrator (see chapter A-1.2.1, page A-5).
» Select `Model>Configuration>General Settings...`.
  The dialog box of the same name appears.
» Select the tab `Namespaces`.
» In the group box `Default for namespace dialog`, activate the check box which should be activated as standard in the default selection dialog when opened. Deactivate the check boxes which should be deactivated as standard.
» Close the dialog box with `[OK]`.
  If one of the default selection dialogs is now opened in the model, the check boxes are preallocated accordingly.

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B-3 Searching for Information

You can use various mechanisms in Innovator to specifically locate a model in the wealth of information:

- **Use information tree**: Each model element has a display window containing information (see page B-81).
- **Search for elements**: In the model browser you filter out the elements with certain properties (see page B-82).
- **Search for name/designations/declarations**: A large number of items are often shown in the drop-down lists of dialog boxes. You can limit these by searching using text patterns (see page B-95).
- **Search for expressions**: Specifications, implementations etc. stored within the model elements can be searched for in different ways:
  - **With the Innovator search function** (see page B-82): The elements are shown as hits that contain the expression searched for in their stored texts here.
  - **With the search function of the respective editor** (see page C-15):

  You can formulate regular expressions to optimally limit the search results here (see page B-95).

B-3.1 Displaying Information

A display window, the information tree, displays structured or hierarchical information about individual model elements or system information.

The following information is available as standard:

- **History:** supplies information about time of creation and last change made, as well as name of creator.
- **Labels:** shows the current editing status.
- **Packages:** specifies which model elements belong to a package in the package structure.
- **Access rights:** lists an overview of the access rights for the various users. These include:
  - Assigning labels (LBL)
  - Version management: importing elements from versioned model parts, import and export of groups (VM)

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- Managing verification routines (VFY)
- Visibility of configuration model in the Innovator Business edition edition (CFG)

Additional specific information is also shown depending on the model element. These include, for example:

- Element properties
- Relationships
- Assigned objects
- Foreign keys
- Specifications (texts)
- Model-external references
- Reservation

Displaying Information about a Model Element

You can view information about model elements in the model browser, diagram or table editors.

The `Information` window with the information tree is also used elsewhere to clearly display information and its structure.

How to proceed

To display information about a model element:

» In the model browser or the respective editor, select the model element which you want to show information about.

» Select `Help>What´s this?`.

The `Information` window containing the information tree opens.

With regard to use, the information tree behaves in exactly the same way as in the model tree (see page B-5).

B-3.2 Searching for Elements

Innovator is equipped with a search function which you can use for searching for elements which have certain properties in your model. To do this, formulate one or several Abfragebausteins and combine them to suit your needs; this then produces a hit list which you can–if necessary, after further constraints– then transfer in the model browser's result region. You can then use them here as and when required.

You can use the following Abfragebausteins:

- Name of the element searched for (see page B-92)
- Terms from text specifications which are stored for the elements (see page B-93)

- Labels and their values (see page B-93)
- Element properties, such as stereotypes and their values (see page B-93)
- Expressions from the element implementation (see page B-93)
- Tcl scripts and their parameters (see page B-93)
- Element types (see page B-93)
- Elements which induce a certain verification message (see page B-93)
- Terms and their notes (see page B-94)
- History of element (user and date) (see page B-94)

For anywhere where you can enter free text as a search criteria, set whether the search criteria should be case sensitive or not. It goes without saying that you can also use text samples, wildcards and regular expressions (see chapter B-3.3, "Searching for Strings using Text Samples", page B-95).

You can also use wildcards for specifications and notes. You can decide whether wildcards should be replaced before the search or not.

Setting up a query can become quite complex. So that you don't have to define each Abfragebaustein every time for frequent queries, you can save as many queries as you need to and implement them as and when required (see chapter B-3.2.7, "Storing and Reusing Queries", page B-91). You can also transfer these saved queries as entries in the menu, which enables you to implement them directly there (see page B-91).

General Procedure

The procedure when carrying out a new search query is always the same:

- Start the search function (see page B-83).
- Set the search area, i.e. the package you want to search (see page B-84).
- Formulate one or more Abfragebausteins (see page B-86).
- Combine the Abfragebausteins with one another using AND or OR joins or attach them using NOT joins. Putting combinations in parenthesis influences the order which the results are used (see page B-87).
- Implement the query (see page B-89).
- Transfer the query result to the model browser's result region.

B-3.2.1 Starting the Search Function

You need the search function if you want to formulate a new query. Read how to implement saved queries in chapter B-3.2.7, page B-91.

How to proceed

To create a new query:

» Jump to the model browser select `Edit>Find>New...`.
The dialog box of the same name appears.

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Dialog Specification

A tab is offered for each possible Abfragebaustein in the dialog box `Find/New`. Each of these tabs has the same setup:

- Depending on the Abfragebaustein's requirements and eventualities, various options are offered in the upper area. Formulate the Abfragebaustein in the window elements.
- Query components are formulated in the text box `Query`. A special syntax is needed for this. The search function automatically adopts Abfragebaustein coding.

  You can jump between any tabs, which means you can transfer any number of Abfragebausteins in the text box.
- Insert where the special character should be inserted for the respective Abfragebaustein's link using the `[AND]` and `[OR]` buttons. Needless to say, you can also insert this using the keyboard.
- Once you have formulated all Abfragebausteins in the text box `Query`, you can start the search. The search results–i.e. the elements which correspond to the Abfragebausteins–are stored in the list box `Result`. Double-click on an element in the result list to select this in the model browser.
- To be able to edit these hits, transfer them in the model browser's result region using the `[Add]` and `[Replace]` buttons. You can limit what is transferred by only selecting certain hits.

Note **All information apart from the `General` tab's settings–i.e. specification of the search area–is transferred in the text box `Query`. This means that you can search in various search areas one after the other using one and the same query.**

B-3.2.2 Setting the Search Area

Searching the entire model can–for larger models– be extremely time-consuming. To limit the search to certain packages, set the search area first. You can limit the search to the following areas:

- Unlimited search in the entire model
- Search in a certain package and, if applicable, the entire subtree within it (recursive).

Note **Searching in a certain package is not saved when a search is saved.**

- Adjust selected elements with search criteria

  This enables you to filter out any set of elements which correspond to your search criteria.

You need to use the dialog box `Find/New` for all following tasks (see page B-83).

Note

You can work in the model browser while the dialog box `Find/New` is open.

Searching Throughout the Models

You have two options when carrying out a search in the entire model:

A: Remove all constraints on the search area.

B: Remove all selections from the model browser and specify that the selection should be taken into consideration.

How to proceed

To search for the A option in the entire model:

» Select the tab `General` in the dialog box `Find/New`.

» Ensure that the check box `Use selection` is deactivated and the field `Search area` is empty.

» Formulate the Abfragebausteins as described on page B-86 and start the search.
The search is carried out in the entire model.

How to proceed

To search for the B option in the entire model:

» Select the tab `General` in the dialog box `Find/New`.

» Ensure that no package or other element is selected in the model browser.

» Activate the check box `Use selection`.

» Formulate the Abfragebausteins as described below and start the search.
The search is carried out in the entire model.

Entering a Set Package

You can limit the search to a set package: Enter the package directly to do this.

How to proceed

To limit the search to a set package:

» Enter the package's package path in the field `Search area`.
or

» Click on `[Select]`.
The dialog box `Paket auswählen` appears. The package tree is shown in the group box `Namespaces`.

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» If the desired package is displayed in the group box `Namespaces`, select it. Otherwise deactivate the check boxes underneath the group.
The packages which were not visible due to the filter are now displayed.

» If necessary, open the subtrees, select the package and click on `[OK]`.
The dialog box `Find/New` can be seen again. You can make a setting so the son packages which are stored in the selected package are also searched through (recursive search).

» To incorporate the son packages, if applicable, select the check box `Recursive`.
The entire subtree below the selected package is also searched through.

Adjusting the Selected Elements with Search Criteria

You can select any elements in the model browser's model tree and cross check them against the search criteria. The result is the subset of the selected element which corresponds to the criteria.

How to proceed

To filter any elements according to certain criteria:

» Select the element/s in the model tree which you want to filter.

» Select the tab `General` in the dialog box `Find/New`.

» Activate the check box `Use selection`.

» Formulate the Abfragebausteins as described below and start the search.
The elements are filtered according to the query component's criteria.

B-3.2.3 Formulating Query Components

A Abfragebaustein specifies which properties the element being searched for should have. Abfragebausteins are divided into categories. Depending on the category, a Abfragebaustein can be substantiated by details.

When formulating a Abfragebaustein, always proceed as follows:

- Start the search function (see page B-83).
- Select the desired Abfragebaustein in the tab.
- Make all specifications required for the Abfragebaustein. You can use parameters to do this.
- Transfer the specifications in coded form to the text box.

Read about which details you can individually set for Abfragebausteins in chapter B-3.2.8, "Search Function Query Components", page B-92.

How to proceed

To formulate a Abfragebaustein:

» If applicable, start the search function (see page B-83).
» Select the Abfragebaustein's tab which you want to formulate.
» Make the desired specifications in the top group of the tab.
» If necessary, click in the text box `Query` where the new Abfragebaustein should be inserted or delete existing Abfragebausteins.
» Click on `[Set]`.
The specifications are coded and inserted at the insertion point in the text box `Query`.
Read how to combine Abfragebausteins in chapter B-3.2.4, page B-87.
Read how to implement queries in chapter B-3.2.5, page B-89.

B-3.2.4 Combining or Attaching Query Components

You can formulate and combine any number of Abfragebausteins to limit your search results to an ideal size. You can combine Abfragebausteins using the following links:

- **AND join:** only elements which contain **both** the properties of the first **and** the second Abfragebaustein are found as hits. The special character for the AND join is the ampersand `&` between the combined Abfragebausteins.
- **OR join:** only elements which contain the properties of the first **or** the second Abfragebaustein are found as hits. The special character for the OR join is the pipe `|` between the combined Abfragebausteins.
- **NOT join:** elements which contain the Abfragebaustein's properties should be excluded from the hits. The special character for the NOT join is the tilde `~` before the Abfragebaustein which should be excluded.

You can also put combined query components in parentheses and, in doing so, e.g. combine one combination's results with another query component.

How to proceed

To combine two Abfragebausteins using the AND join:

» If applicable, create a Abfragebaustein as described in chapter B-3.2.3, page B-86 and transfer it in the text box `Query`.
» Click in the text box `Query` at the end of the entire Abfragebaustein (after the closed parenthesis).
» Click on `[AND]`.
The ampersand `&` is inserted for the AND join.

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» Create the second Abfragebaustein after the ampersand.
Only those elements which contain the properties of both Abfragebausteins are taken into consideration during the search.

How to proceed

To combine two Abfragebausteins using the OR join:

» If applicable, create a Abfragebaustein as described in chapter B-3.2.3, page B-86 and transfer it in the text box `Query`.
» Click in the text box `Query` at the end of the entire Abfragebaustein (after the closed parenthesis).
» Click on `[OR]`.
The pipe `|` is inserted for the OR join.
» Create the second Abfragebaustein after the pipe.
All elements which contain the properties of both Abfragebausteins are taken into consideration during the search.

How to proceed

To exclude an Abfragebaustein from the search using the NOT join:

» If necessary, formulate as in chapter B-3.2.3, page B-86, specifying a Abfragebaustein.
» Activate the check box `NOT` and transfer the Abfragebaustein in the text box `Query`.
All elements which contain the properties of the corresponding Abfragebausteins are excluded from the search.

How to proceed

To put joined Abfragebaustein in parentheses:

» If applicable, create as in chapter B-3.2.3, page B-86, specify two or more Abfragebausteins and transfer them in the text box `Query`.
» Join the query components in the text box `Query` as and when required.
» Mark at least two query components and click on `[(...)]`.
The query component combination is enclosed in parentheses ().
» Create another Abfragebaustein after the closed parenthesis and join it as and when required.
All elements which contain the properties of the query components in parentheses and/or other Abfragebausteins are taken into consideration during the search.

B-3.2.5 Implementing the Query, Correcting Query Components

Once you have made all specifications for the search area (see page B-84) and the Abfragebausteins (see page B-86) and, if applicable, combined Abfragebausteins as necessary (see page B-87), you can start the search.

How to proceed

To start the query:

» Click on [Search].
The search starts. As long as no syntax errors occur in the text box Query, all elements within the set search area are checked to see whether they correspond to the properties which were required in the Abfragebausteins. The hits are stored in the list box Result. The number of hits is given above the list.

Correcting Queries

Abfragebausteins in the text box Query need to be composed in a certain syntax. If you formulate the Abfragebaustein using the buttons in the dialog box, you can be certain that the necessary rules are adhered to.

However, errors can still sometimes crop up. The most frequent errors which cause a message are:

- There are two or more Abfragebausteins in the text box Query which are not joined by either &, | or ~ (see page B-87).
- There are nested Abfragebaustein in the text box Query. These normally occur if the insertion point is within a Abfragebaustein when you click on the [Set] button.

You can correct these cases directly in text box Query.

The hit list could also not match the desired results. In this case, jump to the tab and make the desired changes (see page B-90).

Inserting Missing Operators

If various Abfragebausteins exist in the text box Query, they need to be joined to each other using an operator for AND, OR or NOT joins (see page B-87). If this character is missing you will get a corresponding message stating that the search cannot be carried out.

How to proceed

To add missing operators:

» Click in the text box Query between the two Abfragebausteins and add the necessary operator. If applicable, use the search [AND] or [OR] buttons.

» Carry out the search again by clicking on [Search].

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Jumping to a Query Component's Tab

You can use the first three characters of a Abfragebaustein to jump directly to the tab which it was created in and, in doing so, make the desired changes to the Abfragebaustein.

How to proceed

To jump to the tab which a Abfragebaustein was created in:

» Position the insertion point within the tab ID (the first three characters of the Abfragebaustein) and click on `[Go to]`.
The tab with the corresponding ID appears.

» Mark the entire Abfragebaustein in the text box `Query`.

» Change the specifications in the top group of the tab and click on `[Set]`.
The previous Abfragebaustein is replaced by the new specifications.

» Carry out the search again by clicking on `[Search]`.

B-3.2.6 Transferring Query Results in the Result Area

Once you have successfully carried out the search, the hits are shown in the dialog box `Find/New`'s list box `Result`. However, you cannot further edit the elements here, they need to be transferred to the model browser's result region first.

Double-click on an element in the result list to select this in the model browser.

You can either transfer all or individual entries from the hit list in the result region.

If entries are already available in the result region, decide whether these should be replaced by the entries from the hit list or whether you want to add the entries to the hits in the result region.

How to proceed

To transfer all hits from the search in the model browser's result region:

» To transfer certain hits in the model browser's result region, if necessary, select the hit which you want to transfer.

» To add the entries' hits in the result region, click on `[Add]`.
The elements which are not yet stored in the result region are added to the list and selected there.

» To replace the entries in the result region with the (selected) hits, click on `[Replace]`.
The elements in the result region are replaced by the (selected) hits. The hits from the search are selected.

B-3.2.7 Storing and Reusing Queries

A query can be very basic, e.g.
`NAM("s*") & OCL(1051)`

("Search all packages (`OCL(1051)`), whose names start with a (small) `s`" (`NAM("s*")`)").

It can also be extremely comprehensive and complex. Formulation of the necessary Abfragebausteins are correspondingly complex.

You can store queries under a name which you have chosen and open it when needed. You can also store these saved queries as entries in the `Edit>Find` menu. This means that you have direct access to the corresponding Abfragebausteins.

Storing Queries and Transferring them to the Menu

You can store a completed query and use it again at any time.

How to proceed

To store a query:

» Formulate the desired query (see page B-86).
» In the dialog box `Find/New`, click on `[Save...]`.
Another dialog box appears.
» If you want to make the query available to all users, jump to the tab `General Queries`.
» Enter a significant name for the query in the field `Name`.
» Click on `[Add]`.
The query is transferred to the list box `Name`.
» If you want to be able to see the query in the `Edit>Find` menu, activate the check box `Show in menu` and click on `[Change]`.
» Close the dialog box with `[OK]`.
The query is stored. They are listed in the dialog box `Find/New` in the tab `General` in the drop-down list `Saved queries`.

Note

Searching in a certain package is not saved when a search is saved. If you implement a query using the menu, the current selection in the model browser is always taken into consideration. If no element is selected, the entire model is searched.

Opening Saved Queries

You can load of saved query and–if necessary, after modifications have been made–implement it.

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How to proceed

To load a saved query:

» In the model browser, select `Edit>Find>New...`.
The dialog box of the same name appears.

» If applicable, go to the tab `General`.
All queries which are already stored are listed in the drop-down list `Saved queries`.

» To directly carry out the saved query, double-click on the entry in the drop-down list `Saved queries`.

» If you want to change the query, select it in the drop-down list `Saved queries` and click on `[Set]`.
The Abfragebaustein of the saved query is transferred to the text box `Query`.

» If applicable, make the modifications you want to (see page B-89) and carry out the search.

B-3.2.8 Search Function Query Components

Query components are coded from the search function in a set form:
`<Tab ID> ([<Option 1>] [,<Option 2>]...[,<Option n>] )`
The tab ID is made up of a three-character long code, option IDs are either created from internally set strings or imported from their specifications. They are separated from each other by commas. Their specifications can contain parameters.

Other Information

- chapter B-3.2.3, "Formulating Query Components", page B-86
- chapter B-3.2.4, "Combining or Attaching Query Components", page B-87
- chapter B-3.3, "Searching for Strings using Text Samples", page B-95
- section "Jumping to a Query Component's Tab", page B-90

Query Components

You will find a tab for each Abfragebaustein in the dialog box `Find/New`.

`Name`

You can enter the whole name or part of it. To do this, use text samples (see page B-95). You can also set whether your search criteria should be case sensitive or not.

`Specification`

You can store texts for the elements (see chapter C-2, "Specifying Elements", page C-9). Enter a term from the specifications in this tab. To do this, use text samples and regular expressions (see page B-95).

You can also set whether your search criteria should be case sensitive or not. You can also search for exact word matches. You can also use wildcards for specifications. You can decide whether wildcards should be replaced before the search or not.

`Label`

Search for elements whose labels are assigned certain values. All labels and label values defined for the model are offered.

`Element Properties`

Depending on their element type, elements contain certain properties. According to the programming language, search for these properties according to certain values which the element should possess. You can also set whether your search criteria should be case sensitive or not. You can use an operator to set whether you should search precisely for the search criteria, alphabetically and/or for enumeration of larger or smaller properties, for text samples or regular expressions.

The entries in this tab's drop-down list comply with what is selected in the model browser. Only the possible properties of the selected elements are offered. If nothing is selected, all available properties are offered.

`Implementation`

You can limit the search for expressions in the implementation (but not in ER implementation). You can also set whether your search criteria should be case sensitive or not. You can also search for exact word matches.

`TCL`

You can carry out further search criteria using Tcl scripts. Enter such a Tcl script and its parameter in the tab `TCL`.

`Element Type`

Search for elements which have a certain element type. This differentiates whether the elements are lockable, i.e. whether they are displayed in the model browser, in the model tree or in the list of model elements, or whether they are sub-elements of these lockable elements and therefore only displayed in the detail view of in diagrams.

`Verification Routines`

Innovator is equipped with extensive verifications. You can put together further verification routines from verify options (see chapter A-5, "Putting Together and Calling Verification Routines", page A-109). You can search for elements which induce a certain verification message.

The entries in this tab's drop-down list comply with what is selected in the model browser. Only the verification routines which correspond to the selected elements are offered. If nothing is selected, all available verification routines are offered.

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Note

You can add notes for the elements in the diagrams. Enter a term on the note. To do this, use text samples and wildcards (see page B-95). You can also set whether your search criteria should be case sensitive or not. You can also search for exact word matches. You can also use wildcards for the notes. You can decide whether wildcards should be replaced before the search or not.

History

The time of creation and the last change made are stored for each element. The user who created the element or last made the changes is also stored.

Search for elements which were created or changed by a certain user or for elements which were created and/or changed before, after or at a certain point in time.

Using Parameters

You can use parameters for the search. This lends itself to e.g. element names, as a separate search doesn't need to be carried out for each name. The parameter's name is contained in a dollar sign `$` and assigned to a dialog box with concrete values when the search takes place.

How to proceed

To e.g. get all SA processes with a certain part of the element's name as a result in an SA/SD model:

» Start the search function (see page B-83).

» Delete text box `Query`.

» Enter `*$Name$*` in the field `Name`.

» Ensure that the check box `Case sensitive` is deactivated and click on `[Set]`.

`NAM("*$Name$*",0)` is now in the query area.

» Jump to the tab `Element Type` and position the insertion marker at the end of the `Query` text box.

» Select the `Process` entry in the drop-down list `Element type` and click on `[AND]` and then `[Set]`.

» `NAM("*$Name$*",0) & TYP(691)` is now in the query area.

» Click on `[Search]` for the corresponding elements to be shown in the result region. The value for the `Name` parameter is then asked for.

» Click on the cell in the `Name` line in the `Value` column in the dialog box `Find/New` and enter the part of the element name you are searching for.

» Click on `[OK]` to start the search.

The SA processes with the matching part of the element name entered are listed in the list box `Result`.

B-3.3 Searching for Strings using Text Samples

You can use so-called text samples in various places to search for regular expressions, i.e. a set of strings. You can restrict e.g. entries in the drop-down list to certain entries in this way.

Note

Each character is shown as itself when searching with a text sample, apart from the special characters `\`, `[`, `]`, `.`, `*`, `$` and `^`.

Using Text Samples

Use text samples if e.g. you want to limit a list of names:

Objective	Character	Explanation
Searching for any number of characters	`*`	`I*n` finds *`In`*, `Innovation`, `Intuition` or *`Identification`*

Using Regular Expressions

Use regular expressions for searching within texts (e.g. specifications, implementations etc.).

Objective	Character	Explanation

Canceling Special Characters	`\`	Each character can have a backslash `\` in front of it. Common characters do not change the meaning, only special characters are canceled. Parentheses `()` and the numbers `1-9` are given a special meaning
		`name`
		finds `name`
		`\name`
		finds `name`
		`\[x\]`
		finds `[x]`

Defining a Set of Characters	`[...]`	A set of characters is defined between **square brackets** `[ ]`. The expression then stands for a character from this set. The set can be defined by enumeration of its elements and/or specifying an area in the ASCII table.

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Objective	Character	Explanation

		Such areas are entered by their first and last character, separated by a minus character `-`. The special characters `\`, `$`, `^` and `.` lose their function as text sample within these square brackets and retain their own meaning. The beginning of the line `^` can also e.g. not be defined as a set's element. However, the hat `^` is given another special meaning in a certain place within square brackets. If a hat `^` immediately follows an open square bracket `[`, the given set is searched for according to the complement.
		`m[aiu]ster`
		finds `master`, `mister` or `muster`
		`test[1-3]`
		finds `test1`, `test2` or `test3`
		`[^A-Za-z]`
		finds all characters apart from letters

Reusing Pre-Available Expressions	`[...]*`	The **asterisk after square brackets** `[...]*` stands for any amount–even none–of repeats of the pre-available expression in square brackets.
		`Mod[a-z]*`
		finds `Mode`, `Model`, `Modeling` ...
		`[1-9][0-9]*`
		finds all natural numbers.

Searching for the beginning of the line	`^`	The **hat** `^` stands for the beginning of the line. `^Variable` finds `Variable` at the beginning of the line
Searching for the end of the line	`$`	The **dollar sign** `$` stands for the end of the line. `Term;$` finds `Term;` at the end of the line
Accessing an Internal Buffer	`\(...\)`	The order it appears in is stored in internal buffers by `\(` and `\)` **expressions in parentheses** and can be accessed again using `\1` - `\9` . `array\[\(index\)\]=array\[\1+i\]` finds `array[index]=array[index+i]`
	`\1-\9`	When replacing texts, the buffered expressions can also be accessed for defining the alternative short text. Search template: `array\[\(index\)\]` Alternative short text:: `field[\1-1]` replaces `array[index]` with `field[index-1]`
	`&`	Another character has a special meaning in alternative short texts: The **character** `&` stands for the entire search template in alternative short texts. Search template: `index` Alternative short text:: `&+1` replaces `index` with `index+1`

Note **The minus sign '-' only has a special meaning between square brackets.**

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B-4 Working in Diagrams or Tables

You can graphically display model elements' relationships in your model's diagrams. This means that the diagram is initially a sort of drawing program which you can use–depending on the context–to visualize certain aspects of your model. However, you can also store all information in the diagram's elements which will enable consistency to be checked for later and lastly to create source codes.

Tables display assignments and relationships.

Use of Innovator diagrams and -tables is essentially identical in all Innovator editions.

Only methodical verifications and constraints which affect relationships between the respective elements are added in diagrams.

Handling with various table types –depending on edition and application– varies considerably. The tables's features are covered in the respective chapter.

In this chapter you will learn how to:

- Influence how a diagram or table are displayed (see page B-100)
- Work with a diagram's elements (see page B-105)
- Basically use tables (see page B-118)

Read about how to store method-specific information in diagrams and tables and which elements are permissible in which diagrams in the chapters of the respective editions.

Other Information

- chapter B-2.1.1, "Disambiguation: Element Types, Model Elements, Relationships etc.", page B-19
- chapter B-2.2.2, "Creating and Opening Diagrams", page B-34
- chapter B-2.2.3, "Working with Hierarchical Diagrams", page B-35
- section "Creating Model Elements via the Diagram", page B-39
- chapter B-2.5, "Removing and Deleting Elements", page B-61
- chapter B-2.1.1, "Disambiguation: Element Types, Model Elements, Relationships etc.", page B-19
- chapter B-2.1.2, "Logical and Graphic Existences of Model Elements", page B-22

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B-4.1 Influencing how Diagrams or Tables are Displayed

You can make various settings to modify how a diagram or table is displayed in the screen. Settings which only have an effect on the screen display and those which also change the print layout are differentiated between.

- **Settings for the screen display:**
  - Zooming diagrams (see page B-100)
  - Displaying margins (for printing out later) (see page B-102)
  - Entering minimum font size in the diagram (see page B-103)
- **Settings for screen and print layout** (see page B-103)**:**
  - Displaying elements two or three-dimensionally (with shading)
  - Activating or deactivating frames around the entire diagram (including the info box)
  - Activating or deactivating the table's creation and modification times in the info box.
  - Activating or deactivating the table's creation and modification times in the info box

B-4.1.1 Enlarging and Downsizing Diagrams (Zoom)

Editing of a diagram usually takes place in a diagram which has not been enlarged. You can use the zoom function to look at a small section in more detail or an overview of the diagram.

Note **The current zoom setting doesn't influence which part of the diagram is printed. The whole diagram is always printed.**

The following zoom functions are available:

- Enlarging or downsizing diagrams step by step (see page B-100)
- Zooming in to any area (see page B-101)
- Zooming the diagram to 100% (standard size) (see page B-101)
- Downsizing diagrams in such a way that they completely fits on the screen (see page B-102)
- Going back to the last used zoom setting (see page B-102)

Enlarging or Downsizing Diagrams Step by Step

The diagram is shown with the default size `100%` as standard. You can, however, enlarge or downsize the display step by step–using pre-defined increments–.

Note

When you open a diagram it always has the 100% size. You cannot set any other size when opening a diagram.

How to proceed

To display the current diagram an increment greater:

» Select the menu item `View>Zoom>Zoom In`
or
» Press [F9].
The diagram is increased approximately one grade.

How to proceed

To display the current diagram an increment smaller:

» Select the menu item `View>Zoom>Zoom Out`
or
» Press the key combination [Shift]+[F9].
The diagram is decreased approximately one grade.

Zooming in to Any Area

In every zoom setting, you can set an area within the diagram and enlarge the diagram in such a way that only this area is visible.

How to proceed

To zoom the current diagram into any area:

» Identify the area which you will pull open a capture frame in.
» Select the menu item `View>Zoom>Zoom In`
or
» Press [F9].
The diagram zooms into this area.

Displaying the Diagram as 100%

The standard display is 100%. Once you have changed the display using the zoom function you can return to the standard display in one step.

How to proceed

To zoom the current diagram to the standard display:

» Select the menu item `View>Zoom>100 %`
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» Press the key combination [Shift]+[Ctrl]+[F9].
The diagram is displayed as 100% again.

Displaying the Diagram as an Overview

You can downsize your diagram in one step so that all elements are visible.

How to proceed

To fully display the current diagram in an overview:

» Select the menu item `View>Zoom>Overview`
or
» Press the key combination [Ctrl]+[F9].
The diagram is downsized so that all the elements are visible.

Using the Last Zoom

Innovator always remembers the zoom setting which was last chosen. This means that you can easily switch between any zoom setting and the last change.

How to proceed

To go back to the last zoom setting:

» Select the menu item `View>Zoom>Back`.
The diagram zooms back to the setting which was last used.

B-4.1.2 Showing and Hiding Margins

You can print out diagrams and tables. To find out how many pages will be printed out and where the page boundaries are when editing, show the margins.

How to proceed

To show and/or hide the margins:

» Select `Extras>Options...` in the diagram or table.
The dialog box of the same name appears.
» To show the margins, activate the check box `Pages`. To hide the margins, deactivate the check box `Pages`.
» Click on `[Apply]` and close the dialog box with `[Close]`.

B-4.1.3 Setting Minimum Font Size in the Diagram

When diagrams are downsized, the value from which only a rectangle is shown instead of labeling is defined by the minimum font size.

Note

If you set the minimum font so that the font will not be displayed in the normal diagram display (e.g. 18), the font is not shown when printed either.

How to proceed

To set the minimum font size:

» In the current diagram, select `Extras>Options...`.
The dialog box of the same name appears.
» Enter the desired value in the field `Minimum font size`.
» Click on `[Apply]` and close the dialog box with `[OK]`.
If the diagram needs to now be downsized, only a frame appears instead of labeling, as long as the given value for the font size is undershot.

B-4.1.4 Making Settings for the Print Layout

You can make various settings for displaying a diagram or table which you can retrieve in the respective print layout:

- Displaying elements two or three-dimensionally (with shading)
- Activating or deactivating frames around the entire diagram (including the info box)
- Listing the table's creation and modification times in the info box
- Listing the table's labels in the info box

All these settings are activated as standard. You can deactivate them individually. You can make all these settings in a dialog box.

How to proceed

To make the aforementioned settings:

» Select `Extras>Options...` in the diagram or table.
The dialog box of the same name appears.
» To display the elements in the diagram or table without shading, deactivate the check box `3D layout`.
» To hide the frames (including the info box) around the diagram, deactivate the check box `Frame`.

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» To hide the creation and modification times in the info box, deactivate the check box `History`.

» To hide the list of labels in the info box, which are applicable for the tables, deactivate the check box `Labels`.

» Click on `[Apply]` and close the dialog box with `[OK]`.

B-4.2 Navigating to Model Elements in the Diagram

There is a navigation frame which can be hidden or shown in the left-hand area of the window; this is shown as default. It shows the elements displayed in the diagram in a hierarchical form. This display is dependent on the methodical content of the respective diagram.

How to proceed

To show the navigation frame:

» Activate the toggle menu item `View>Navigation Frame` in the diagram.
The navigation frame is shown.

Navigate to a model element in the diagram by selecting it the navigation frame. Model elements can be selected both in the navigation frame and in the diagram itself. A selected model element is now placed in the visible area. You can find information about selecting model elements in the diagram in the chapter B-4.3.1, "Selecting Model Elements", page B-105.

The navigation frame also displays model elements that are not shown in the diagram (e.g. history, labels, attributes or methods of classes with hidden compartments).

You can show and hide subtrees by clicking on the '+' or '-' characters in front of the subtree or by double-clicking on the subtree.

You can release subtrees and individual model elements in the navigation area by holding down the [Ctrl] key and double-clicking on the subtree or model element. You can also cancel this release in the same way.

By making a selection in the navigation frame, you can apply all available functionalities to the diagram.

B-4.3 Working with a Diagram's Model Elements

If you create elements in a diagram, Innovator sets a default position and size. You can change this afterwards. You can also make a wide array of further specifications to the elements.

You normally need to select the elements which you want to modify before. There are various options available for this. In this chapter you will learn how to

- Select one or more elements (see page B-105)
- Position elements (see page B-107)
- Changing the size of the elements (see page B-114)
- To jump to selected elements in the model browser

Read which changes can be made to element content in the respective chapters of the Innovator editions.

B-4.3.1 Selecting Model Elements

Before you can edit elements in a diagram, you first need to select the diagram. This choice is called a selection. Model elements can be selected both in the navigation frame and in the diagram itself.

Innovator always differentiates between two types of selection:

- **Single selection**: This is used to edit the selected element
- **Multiple selection**: This is usually used to connect the selected elements, whereby the sequence of the selection must generally be observed. The first element selected is also referred to as the **primary selection** and is marked with a different color than all other elements of the selection.

Selecting model elements in the navigation frame differs slightly from that in the diagram.

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Selecting Model Elements in the Navigation Frame

To select elements in the navigation frame, proceed as follows:

Objective	Procedure
Select a model element	Click on the element with the left mouse button [LMB]
Select several model elements, expanding selection	Select the first element in the diagram (primary selection), then click on the other elements with the [LMB] while pressing the [Ctrl] key
Select various model elements in a level	Select the first element (primary selection), then click on the other elements in the same level with the [LMB] while pressing the [Shift] key
Select all model elements shown in the diagram	`Edit>Select All` or press the key combination [Ctrl]+[A]
Select all model elements	Click on the root node in the navigation tree with the [LMB] while pressing the [Shift] and [Ctrl] keys
Select all model elements in a subtree	Click on the subtree with the [LMB] while pressing the [Shift] and [Ctrl] keys
Deselect individual model elements	Click on the element with the [LMB] while pressing the [Ctrl] key
Cancel selection	Click in the background with the [LMB]

Selecting Model Elements in the Diagram

To select elements in the diagram, proceed as follows:

Objective	Procedure
Select a model element	Click on the element with the left mouse button [LMB]
Select several model elements, expanding selection	Select the first element in the diagram (primary selection), then click on the other elements with the [LMB] while pressing the [Shift] key
Select several model elements in an area (without relationships etc.)	Pull open a capture frame around this area with the [LMB] pressed

Objective	Procedure
Select several model elements in a hierarchical relationship	While pressing the [Ctrl] key, click on the hierarchically "highest" model element with the [LMB]
Select various graphically linked model elements	Click on a model element with the [LMB] while pressing the [Shift] and [Ctrl] keys
Select all model elements shown in the diagram (without relationships)	`Edit>Select All` or press the key combination [Ctrl]+[A]
Select all relationships shown in the diagram	Click on a relationship with the [LMB] and then press the key combination [Ctrl]+[A]
Mark another model element in a selection as the primary selection	Click on this model element with the [LMB]
Deselect individual model elements	Click on the element with the [LMB] while pressing the [Shift] key
Cancel selection	Click in the background with the [LMB]

B-4.3.2 Positioning Model Elements

Any elements can be moved out of the diagram (see page B-108). You can also use the following functions for positioning elements:

- Move all elements at the same time (see page B-108)
- Align various elements on an (imaginary) horizontal or vertical line (see page B-108)
- Align the distance between various elements (see page B-110)
- Distribute all elements from the diagram onto more or fewer pages.

How to proceed

The diagram must be locked during all of the following tasks.

» If necessary, lock the diagram.

Note

You can remove all graphical changes in the diagram before saving and restore the last state of your diagram with `Edit>Undo`. However, this is only possible if you have deactivated the check box `Auto-update` in the dialog box `Extras/Options` for your diagram.

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Moving Selected Elements

You can move one or several elements as many times as required within the diagram.

How to proceed

To move one or more elements:

» Select the elements which you want to move (see page B-105).

Note

If you hold down the [Alt] key while making the selection with the mouse, the element is moved either horizontally or vertically, depending on the direction you first move your mouse in.

» Click on one of the selected elements and move it to the desired position keeping the mouse button pressed.

or

» Move all selected elements in the desired direction with the arrow keys.

Moving all Elements

You can move all elements (apart from the frame) displayed in the diagram at the same time.

How to proceed

To move all elements in the diagram at the same time, without them being selected beforehand:

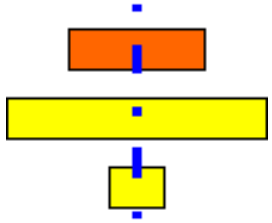
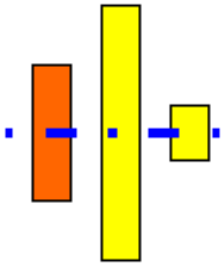
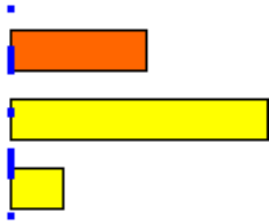
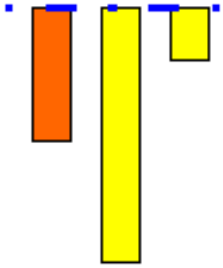
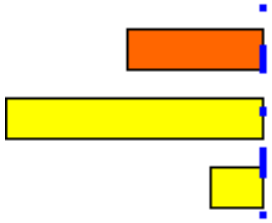
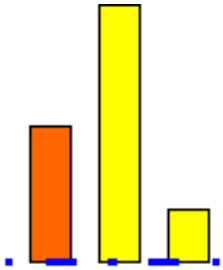
» If necessary, zoom in the overview display to see the entire diagram (see page B-102).

» Press the key combination [Shift]+[Ctrl], click in a free area of the diagram and move the elements to the desired position.

Aligning Elements Together

Your diagram would be more clear if as many elements as possible were on an imaginary line. If you align elements together, their positioning is based on the element which is first selected.

You can select the following settings:

Vertical Line	Horizontal Line
Centered 	Centered 
Left-aligned 	Above-aligned 
Right-aligned 	Below-aligned 

Note

You can always only align similar elements together, i.e. model elements, text elements etc.

Read how to arrange dependent elements (e.g. labeling), relationships and tree structures in section "Accessing a Default Arrangement", page B-112.

How to proceed

To position elements on the same horizontal line:

» Select the element which you want to use as the orientation point for positioning the other elements.

» Select all elements which you want to align with the element which was first selected.

» To

- Align elements centrally, select `Arrange>Align>Horizontal`

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- Align elements above, select `Arrange>Align>Top`
- Align elements below, select `Arrange>Align>Bottom`

All selected elements are aligned with the height of the element which was first selected. The side distance to the frame does not change.

How to proceed

To position elements on the same vertical line:

» Select the element which you want to use as the orientation point for positioning the other elements.

» Select all elements which you want to align with the element which was first selected.

» To

- Align elements centrally, select `Arrange>Align>Center`
- Align elements to the left, select `Arrange>Align>Left`
- Align elements to the right, select `Arrange>Align>Right`

All selected elements are aligned above or below the element which was first selected. The vertical distance to the frame does not change.

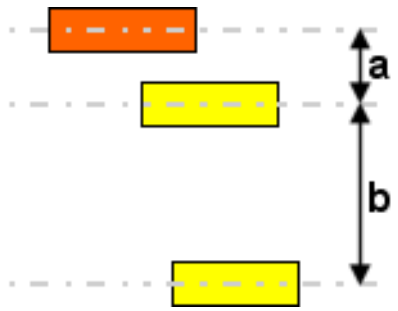
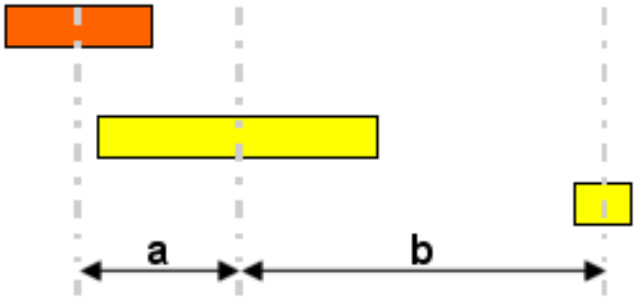
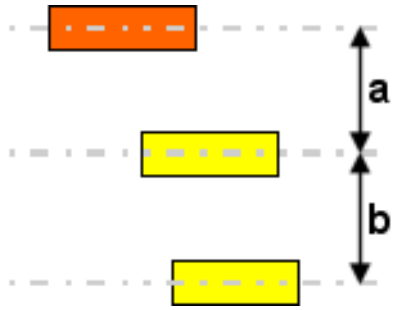
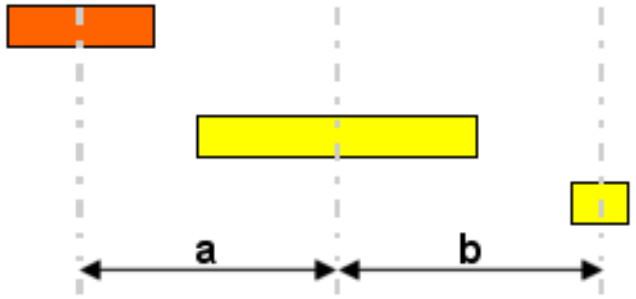
Aligning Distances

You can more three or more elements in such a way that their horizontal or vertical distance does not change.

Note

You can always only align distances of similar elements, i.e. distances between model elements, text elements etc.

The position of both elements which are closet to the diagram frame does not change. Only the middle elements are moved horizontally or vertically; this means that the distances a and b are the same:

Vertical Distance	Horizontal Distance
	
Goes to 	Goes to 

Note

You can set it so that only the element which you selected first remains fixed and all other selected elements are moved a set distance (see page B-112).

How to proceed

To align the vertical distance of various elements:

» Select at least three elements.

» Select Arrange>Even Spacing>Vertical.
The middle elements are moved vertically in such a way that their distance to the most outer elements is aligned.

How to proceed

To align the horizontal distance of various elements:

» Select at least three elements.

» Select Arrange>Even Spacing>Horizontal.
The middle elements are moved horizontally in such a way that their distance to the outer elements is aligned.

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Setting The Spacing Distance

If you align the distances between elements as described on page B-110, the positioning of the most outer elements remains unchanged as standard. Only the middle elements are moved horizontally or vertically; this means that the distances a and b are the same.

You can make a setting so only the position of the element which you selected first does not change. All other elements are then positioned in a set horizontal or vertical distance from each other if you select Arrange>Even Spacing>Horizontal or Arrange>Even Spacing>Vertical.

How to proceed

To set the elements so that they are positioned a certain distance from each other:

» In the current diagram, select Extras>Options....
The dialog box of the same name appears. The value 0 is shown in the group box Spacing distance as standard. This sets the middle elements so that they are evenly spread out between the outer elements.

» To set the distance between elements, enter a value between 10 and 256 in the group box Spacing distance in the field Horizontal or Vertical.

» Click on [Apply] and close the dialog box with [Close].
If you only align the distances between selected elements in the diagram (see page B-110), the selected elements are positioned in the set distance from each other.

Accessing a Default Arrangement

Innovator uses a positioner, which is always used if new elements or given positions are inserted into a diagram. This positioner attempts to design the arrangement of the elements. You can also activate the positioner yourself.

You can influence the positioner's results by changing the default distances (see page B-113).

Note **If the positioner's result does not conform with your results, you can restore the last state of your diagram with Edit>Undo. However, this is only possible if you have not activated auto update for your diagram.**

The default positioner acts upon the relationships elements have to each other. The following rules generally apply:

- The **default arrangement** recognizes various behaviors:
  - It primarily refers to elements which are **dependent** on one another (e.g. a relationship is dependent on one of its model elements, labeling is dependent on its relationship etc.).
    Therefore, if you apply the default arrangement to a model element, its relationships are repositioned, but not the model element itself.

- If this concerns a relationship, its course is improved (e.g. removing unnecessary corners).

- If **structures in the form of a tree** are possible in a diagram (e.g. generalization in class or component diagrams), you can use a command to trigger a clear tree display.

  You can set how far the model elements **in the tree** should be positioned from each other in these diagrams using the **default distance**. Read about this in section "Setting Distances in Trees", page B-113.

How to proceed

To optimize the course taken by relationships:

» Select the relationship.

» Select `Arrange>Standard Layout`.

How to proceed

To reposition subordinate elements from the default position to its subordinate element:

» Select the higher-level element.

» Select `Arrange>Standard Layout`.

How to proceed

To arrange model elements which have a hierarchical relationship to each other in a clear tree display:

» Select the higher-level model element.

» Select

- For a display for son classes which are arranged horizontally `Arrange>As Horizontal Tree`
- For displaying son classes which are arranged horizontally `Arrange>As Vertical Tree`

All model elements which are stored under the selected model element are positioned in distances from one another that were set as default distances (see page B-113).

Setting Distances in Trees

Innovator can position model element in diagrams which display hierarchical relationships. You can set the distances which should form the basis of the default positioning of trees.

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How to proceed

To set the default distance between model elements in trees:

» In the current diagram, select `Extras>Options...`.
The dialog box of the same name appears.
» Enter the desired value for the horizontal default distance between model elements of the same hierarchy level in the group box `Default distance` in the field `Horizontal`.
» Enter the desired value for the vertical default distance between model elements of different hierarchy levels in the field `Vertical`.
» Click on `[Apply]` and close the dialog box with `[Close]`.
If you only select `Arrange>As Horizontal Tree` in the diagram, the selected elements are positioned in the set distance from each other.

Stretching and Compressing Diagrams

If the spacing distances between the elements in your diagram are too big or too small, you can stretch or compress your diagram.

Note **The diagram's info box cannot be moved.**

How to proceed

To stretch or compress the diagram:

» If necessary, zoom in the overview display to see the entire diagram (see page B-102).
» Lock the diagram.
» Press the [Ctrl] key, click in a free area of the diagram, and make a small movement with the mouse pointer with the mouse button pressed.
A grid shows the entire area which the diagram encompasses. You can stretch or compress this grid by moving the mouse pointer.
» Change the grid until it has the desired size keeping the mouse button pressed.
The diagram's elements now space themselves out in the new area.

B-4.3.3 Changing Model Element Sizes

Innovator recognizes two behaviors for determining the size of an element:

A: **Manual size setting:** set the size for each individual element.

Note

This procedure can primarily be found in diagrams in the Innovator Object and Innovator Business editions (class, component and object diagrams).

You can also align the size of a selected element to that of a certain element using this procedure.

B: **Automatic determination of size using Innovator:** all elements of an element type are always aligned to the same size. This is centered around the size of the element which has the longest label.

You can only influence how large the elements will be using word-wraps. Read about this in chapter B-2.4.1, "Learning Wrapping Rules for Element Names in Models", page B-55.

This procedure only affects certain model elements whose size cannot be manually altered.

Note

This procedure can primarily be found in diagrams in the Innovator Function and Innovator Data editions.

How to proceed

The diagram must be locked during all of the following tasks:

» Lock the diagram.

Manually Changing the Size

You can only change the width of some model elements in the Innovator Object and Innovator Business editions; for others you can change both the width and height.

How to proceed

To manually change the size of an element:

» To find out whether the model element can be changed manually, move the mouse pointer over the top or bottom edges of a model element or over one of its corners.

If the model element can be manually changed, the mouse pointer becomes a double arrow. Otherwise it doesn't change.

» To change the size of the model element, click on the desired side of the element and pull the frame in the right direction keeping the mouse button pressed until you have reached your required size.

The frame shows the current size.

Transferring an Element's Size

You can transfer the size of an element to other elements of the same element type.

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How to proceed

To transfer the size of an element to another element:

» Select the element whose size you want to transfer to another.

» Also select the elements which you want to customize.

» Select

- `Arrange>Align Size>Same Width` to customize the width of the selected element.
- `Arrange>Align Size>Same Height` to customize the height of the selected element.
- `Arrange>Align Size>Same Width and Height` to customize both the width and the height of the selected element.

The element which has the same element type as the element which was first selected is now given the same size.

Optimizing the Size

You can automatically optimize the size of all elements in a diagram so that their labels completely fit in.

How to proceed

To optimize the size of an element:

» Select `Arrange>Optimize Size`.
All the diagram's elements are changed so that their labels have the optimum space.

B-4.3.4 Jumping to Selected Model Elements in the Model Browser

You can jump from one selected element to the same one in the model browser's list of model elements. If you have not selected anything, jump to the entry for the diagram yourself.

The model element selected in the diagram is also selected in the model browser when the jump takes place. This means that you don't have to waste time looking for the desired element in the model browser.

How to proceed

To jump to selected elements or diagrams in the list of model elements in the model browser:

» Select an element in the diagram editor.
or

» Select no element in the diagram editor.

  To selection determines whether you jump to the element or the diagram in the model browser.

» Select `Jump>Model Browser`.

  The model browser appears. The element or diagram is selected in the list of model elements.

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B-4.4 Working with Tables

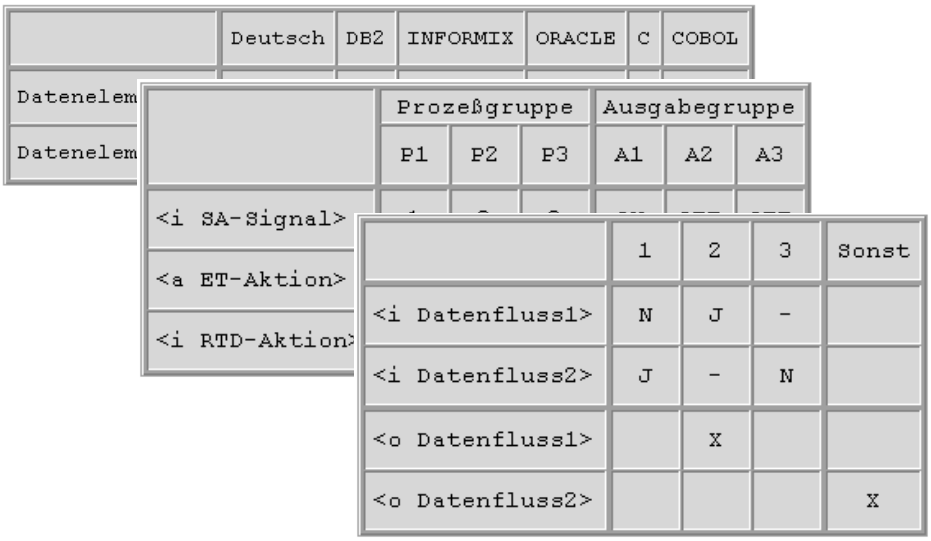
Tables can be found in various places in Innovator. You can influence the content, setup and appearance in some cases. The following sections show how to work with tables which can be edited.

- Selecting in tables (see page B-119)
- Moving lines or columns (see page B-122)
- Changing table entries (see page B-121)

There are various types of table in Innovator. Handling with these table types–depending on Innovator edition and application–varies considerably. The tables's features are covered in the respective chapter. The following explanations deal with activities which you can carry out in all tables.

A Table's Building Blocks

Tables–also in Innovator–are made up out of cells which are arranged into lines and columns.



Both columns and lines normally have a title. Tables can be further divided into groups.

B-4.4.1 Creating Fixed or Any Values

In some tables (e.g. decision tables), you can set whether you want to choose between fixed values (e.g. `J` or `N`) in the cell's content or whether you can enter any text.

If you want to fill the table's cells with content at a later stage, this setting is then either correspondingly offered in a list containing values or a field which you can enter any value in.

How to proceed

To set whether you want to use fixed or any values:

» Lock the table if necessary.
» Click in the background of the table window and select `Edit>Properties...`.
  The dialog box of the same name appears.
» Select the tab `Properties`.
» Using the junctions in the group box `Cell values`, enter which values you want to use and close the dialog box with `[OK]`.

Setting Fixed Values

If you want to have fixed values set for your tables, you can set which values should be offered for the respective junctions.

How to proceed

If you want to define other values for the various junctions:

» Select `Extras>Options...`.
  The dialog box of the same name appears.
  An entry and the respective current value is shown for each alternative in the list box `Text list`.
» Select the entry in the list whose value you want to change.
  The value is shown in the field below the list.
» Enter the desired value and click on `[Set]`.
» Repeat this step with all values which you want to change.
» Then click on `[Apply]` and close the dialog box with `[OK]`.

B-4.4.2 Selecting Cells, Lines and Columns

To be able to edit tables you need to select individual cells, lines or columns by clicking on them with the left mouse button.

Note

If you want to select more than one cell, the selection needs to be homogenous, i.e. only column titles or only row titles or only similar table entries can be selected.

A line is selected if the cell which contains the row title is selected. The same applies for columns and column titles.

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Selecting Table Elements	Operations	Effect
Selecting individual cells	Click once in the cell.	This old selection is canceled. The cell is selected.
Selecting various cells	Select a cell. Click on other cells with the [Ctrl] key pressed.	The cells are selected.
Undoing selection of a cell	Click on the cell which is currently selected with the [Ctrl] key pressed.	The cell is no longer selected.
Selecting an area of cells	Select a cell. Click on another cell with the [Shift] key pressed.	All cells which are in the rectangle with both of the clicked on cells as corners are selected.
Selecting Lines	Select the cell which contains the row title.	The line is selected.
Selecting Columns	Select the cell which contains the column title.	The column is selected.

B-4.4.3 Inserting Rows and Columns

You can insert columns and lines into some tables which can be edited.

Columns or lines which have a set title are differentiated between from those which you have to enter a new title for. A drop-down list which you can select an object from is also offered in some cases.

Note **If the table already has a `Else` column (e.g. decision table), no others can be created.**

Inserting Lines You need to select a line title before you can insert a line.

How to proceed

To insert a line:

» If necessary, lock the table window.

» Select the line title of the line **after** which you want to insert the new one.

» Select `Insert>Line`.
The line is inserted after the row you previously selected.

Inserting Columns You need to select a column title before you can insert a column.

How to proceed

To insert a column:

» If necessary, lock the table window.
» Select the column **after** which you want to insert the new one. Ensure that the `Else` column is not selected.
» Select `Insert>Column`.
The column is inserted after the column you previously selected.

B-4.4.4 Changing Column Titles and Cell Contents

In some tables you can change the column title. In tables which have columns which are grouped (e.g. process activation tables), the group title also counts as a column title.

Changing Column Titles

As the column titles are not additionally labeled, if applicable, you need to make a slight diversion to find out whether you can make changes or not.

How to proceed

To find out whether you can make changes in the column title of the current table:

» Select `Extras>Options...`.
If there is a list box `Text list` in the dialog box with the entries `...-Column Name=` or `...-Group Name=` , you can change the corresponding column title.

How to proceed

If you want to define another column title:

» Select the entry in the list box `Text list` whose value you want to change.
The value is shown in the field below the list.
» Enter the desired value and click on `[Set]`.
» Repeat this step with all values which you want to change.
» Then click on `[Apply]` and close the dialog box with `[OK]`.

Changing Cell Contents

You can change the contents of cells in which changes can be made. Two basic types are distinguished between here:

- **Fixed cell values:** the contents of the cell can only change between predefined values.

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- **Any cell values:** the contents of the cell can have any values.

Set the type for the whole table. Read how to change table types in chapter B-4.4.1, page B-118.

How to proceed

To change the contents of a cell:

» If necessary, lock the table window.

» Select the cells whose contents you want to change and select `Edit> Properties...`.
The dialog box of the same name appears.
If `Cell values Fixed` is set for the table, the possible values are shown in a list.
If `Cell values Any` is set for the table, a field is offered.

» Select the desired values from the list or enter the desired value in the field `Name`.

» Click on `[Apply]` and close the dialog box with `[OK]`.
The cell contains the new contents.

B-4.4.5 Moving Lines and Columns

You can move lines and rows within a table. The following prerequisites must be met:

- Only lines or only columns can be selected. A mixed selection is not permissible when moving.
- Lines can only be moved within their group. e.g. It is not possible to make an action row into a condition row in a decision table.

Note **A line is selected if the cell which contains the row title is selected. The same applies for columns and column titles.**

How to proceed

To move a row within a group:

» If necessary, lock the table window.

» Select the row title of the row which you want to move, keep the mouse button pressed and move the mouse pointer in a vertical direction.
A horizontal line indicates the row's position. If you reach the edge of the window, the window contents is moved in the corresponding direction.

» If the line is now in the desired position, release the mouse button.
The row is moved to the position.

How to proceed

To move columns within a group:

» If necessary, lock the table window.
» Select the column title of the column which you want to move, keep the mouse button pressed and move the mouse pointer in a horizontal direction.
A vertical line indicates the column's position. If you reach the edge of the window, the window contents is moved in the corresponding direction.
» If the line is now in the desired position, release the mouse button.
The column is moved to the position.

B-4.4.6 Deleting Rows and Columns

In tables which you can create columns or rows, you can also delete these.

How to proceed

To delete a row or a column:

» If necessary, lock the table window.
» Select the row or column which you want to delete (see page B-119) and select `Edit>Delete`.
The corresponding cells are deleted.

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B-5 Using the Class Browser

Object-oriented methods essentially use classes as templates for objects. You can therefore find information about the use of classes in the model browser and in diagrams in the class browser in the object-oriented Innovator Business edition.

You can edit classes with the class browser by editing their property values and attributes.

B-5.1 Opening Class Browsers

Note

The class browser is only available in the Innovator Business edition edition if you have the privilege CFG (see page A-4).

To be able to lock and edit classes, you always need access rights to these classes (see page A-4).

You can open the class browser in the model browser or in the diagram using the menu item `Extras>Open Class Browser...`. This shows the same command for `Element>Open`.

Initial Selection of the Class Browser

When opening the class browser, Innovator tries to determine the class which can be selected die to the selection made in the model browser or diagram. This e.g. selects the classes which belong to an object from the object diagram.

Calling the Class Browser and its Functions

In the class browser, you can

- Search for classes (see page B-127)
- Lock classes for editing (see page B-127)
- Jump classes (see page B-128)
- Create classes (see page B-128)
- Show or edit classes (see page B-128)
- Delete classes (see page B-129)
- Specifying classes in the specification editor (see page B-129)

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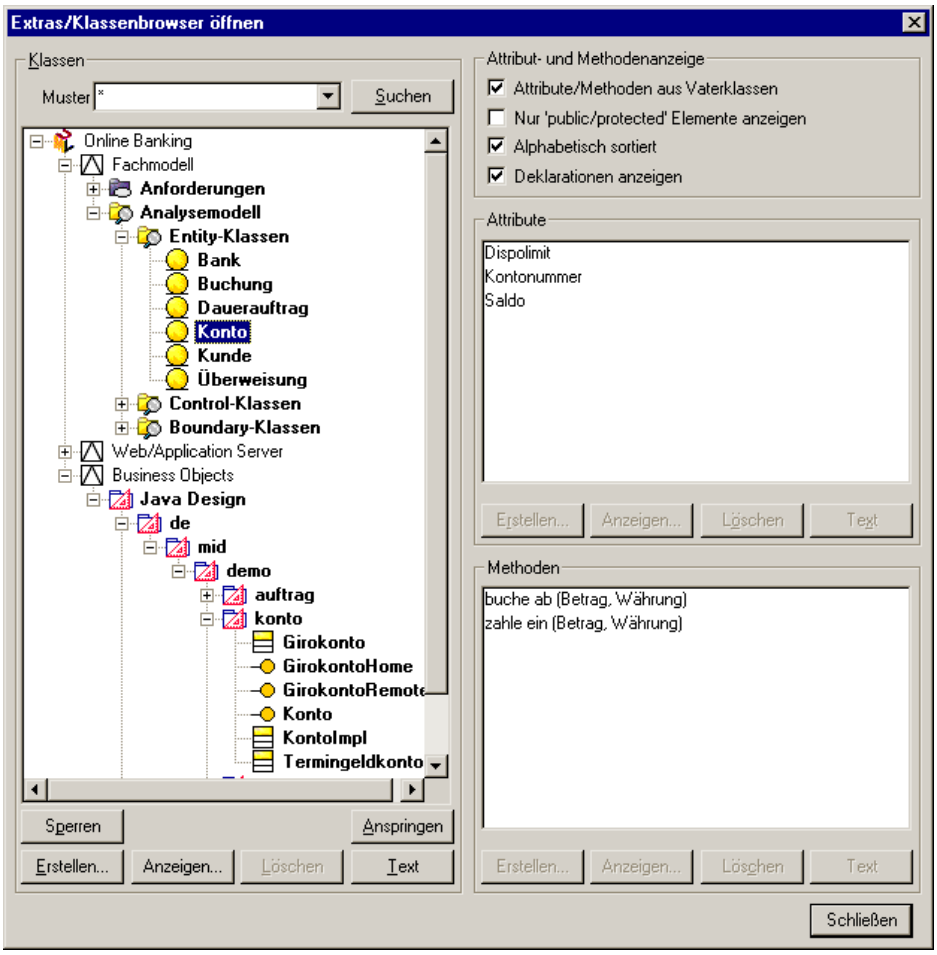
How to proceed

To open the class browser:

» Jump to the model browser or the diagram.

» Select a model element if you want to make an initial selection in the class browser.

» Select `Extras>Open Class Browser...`.
The class browser opens.



B-5.2 Using the Class Browser

The class browser facilitates access to the classes in a model.

Note **Classes and attributes are created, modified or deleted independently from their graphic representations, i.e. attributes can also be created for a class if these are hidden in the diagram which the class browser was started from.**

B-5.2.1 Editing Classes in the Class Browser

These are shown in a tree structure in the group box `Classes` and are sorted according to packages.

If a class is selected when the class browser is opened, this is selected in the tree .

Note

A class can only be edited if it is locked (see chapter B-2.1.4, "Reserving Elements for Editing (Locking)", page B-28).

Searching for Classes

The class browser enables classes to be searched for as it uses a text sample for the name. Each character stands for itself in text sample, apart from the asterisk '*', which stands for any number of any character (also for none).

The drop-down list `Pattern` lists all hits found. Using the button `Find`, the classes found are selected in the tree.

Use the menu item `Edit>Find` for more complex searches (see chapter B-3.2, "Searching for Elements", page B-82).

How to proceed

To search for a class:

» Enter the text sample you are looking for in the field `Pattern` and select a class from the drop-down list `Pattern`.

» Click on `[Find]`.
The first class which corresponds to the text sample is selected in the tree . The attributes and, if applicable, the methods which belong to the class are shown in the appropriate areas according to the settings.

Locking or Unlocking Classes

You can reserve a selected class which isn't locked by another user to edit. If the selected class is already locked then change the button's command to unlock and the class can then be released for other users.

How to proceed

To lock or unlock a class:

» Select a class in the tree .

» Click on `[Lock]` or `[Unlock]`.
The class is reserved for you to edit it or your reservation is finished. The class' properties button changes from `[Display]` back to `[Modify]`.

Read about Innovator's locking concept in chapter B-2.1.4, "Reserving Elements for Editing (Locking)", page B-28.

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Jumping Classes

You can open a dialog using the [Jump] button; which you can use to jump to all diagrams which the selected class is to be depicted in.

This matches the functionality of the menu item Jump>Reference... in the model browser for selected classes (see chapter B-6.1, "Model-Internal References", page B-133).

How to proceed

To jump to a class:

» Select a class in the tree .

» Click on [Jump].
A dialog appears. All of the class' graphic existences are listed in the table This Model with their element type, name and path component.

» Select one or more target elements which you want to jump to.

» Click on [Jump].
The dialog box is closed.
The respective diagrams are opened and all references are selected.

Creating Classes

A prerequisite for creating a class is to use at least one of the entered templates under Model>Configuration>Classes>Class Templates.... If various templates exist, a drop-down list is hidden and a new class is created according to the selected template. The list of class templates only contains templates which are permitted in the package. If none of these templates exist, the message "Command not permitted."

You can only create classes in packages which you have the corresponding access rights to and for classes which are permissible as model elements.

How to proceed

To create a class:

» Select a package which you want to be able to create classes in or select a class in such a package to set the assignment of the classes to be created to the package.

» Click on [Create].
If more than one class template exists, a dialog box appears for you to select the desired class template. Confirm the selection with [OK].
The class is created in the selected package or in the selected class' package which correspond to the class template.

Displaying or Changing Classes

Displaying and changing a class is carried out in a class' properties dialog. If the class is locked you can change the properties there, otherwise you can only view them. You cannot lock the properties dialog at a later stage.

How to proceed

To display or change a class' properties:

» Select a class in the tree .
» Click on [Display] or [Modify].
The properties dialog for classes appears.

Deleting Classes

You can completely delete a selected class and its model elements it is based on from the model.

How to proceed

To completely delete a class from the model browser:

» Select a class in the tree .
» Click on [Delete].
If deletion control is activated, all elements which are going to be deleted with the class are listed in a dialog. You can cancel the deletion process.
The class and its model elements it is based on are completely deleted from the model.

Specifying Classes in the Specification Editor

Specify classes in the specification editor in text form, particularly for documentation purposes.

How to proceed

To specify a class with the specification editor:

» Select a class in the tree .
» Click on [Text].
The specification editor opens.
Read how to use the specification editor in chapter C-2, "Specifying Elements", page C-9.

B-5.2.2 Editing Attributes and Methods in the Class Browser

If you select an attribute of a method before opening the class browser, a corresponding selection is made in the list of class browsers with the same name.

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Note **Methods and attributes can only be edited in classes which have been locked by the user (see chapter B-2.1.4, "Reserving Elements for Editing (Locking)", page B-28).**

Controlling how Attributes and Methods are Displayed

You can control how attributes and methods which belong to the classes selected in the class browser's tree are controlled using check boxes.

How to proceed

To control how attributes and methods are displayed:

» Activate

- check box `Members of superclasses` for displaying attributes and methods from the parent class of the selected class. The name of the parent class is also given for each of these entries.
- check box `Show ´public/protected´ elements only` for finally displaying attributes and methods from the parent class of the selected class with the visibility 'public' or 'protected'.
- check box `Alphabetically sorted` for displaying attributes and methods of the selected class in alphabetical order. Otherwise the display occurs in user-defined order.
- The check box `Show declarations` for displaying complete declarations of attributes or methods. Otherwise only their names are displayed.

The view of the list box `Attributes` or the `Methods` is up-dated accordingly.

Creating Attributes or Methods

You can create new attributes or methods in the class browser.

A prerequisite for creating attributes or methods is to use at least one of the entered templates for the corresponding element type under `Model>Configuration>Classes>Class Templates...`. If various templates exist, a drop-down list is hidden and a new attribute or a new method is created according to the selected template.

How to proceed

To create an attribute or a method:

» Select the class in the tree which you want to create an attribute or method for and lock it as well.

» In the group box `Attributes` or `Methods`, click on `[Create]`.

If more than one template exists, a dialog box appears for you to select the desired template. Confirm the selection with `[OK]`.

The attribute or method is created in the selected class corresponding to the template and selected in the list box `Attributes` or `Methods`.

Displaying or Changing Attributes or Methods

Displaying and changing an attribute or a method is carried out in a model element's properties dialog. If the class is locked you can change the properties there, otherwise you can only view them. You cannot lock the properties dialog at a later stage.

If you make a multiple selection, a dialog appears to edit the element properties which have all selected attributes or methods. The `[Modify]` button is deactivated by selecting a model element in a locked parent class.

How to proceed

To display or change properties from attributes or methods:

» Select the model elements which you want to display or edit in the list box `Attributes` or `Methods`.

» Click on `[Display]` or `[Modify]`.
The properties dialog appears.

Deleting Attributes or Methods

You can completely delete a selected attribute or method from the model.

How to proceed

To completely delete an attribute or a method from the model:

» Select the model elements which you want to delete in the list box `Attributes` or `Methods`.

» Click on `[Delete]`.
If deletion control is activated, all elements which are going to be deleted with the selected model elements are listed in a dialog. You can cancel the deletion process.
The model elements are completely deleted from the model.

Specifying Attributes or Methods in the Specification Editor

Specify attributes or methods in the specification editor in text form, particularly for documentation purposes.

Implementation text for a programming language can also be displayed for methods. If no declaration is available in an implementation language, the specification text is provided directly. Otherwise, select the desired language from a list. Here, UML stands for the specification.

How to proceed

To specify an attribute or a method with the specification editor:

» Select the attribute or method which you want to specify.

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» Click on `[Text]`.
The specification editor opens.
Read how to use the specification editor in chapter C-2, "Specifying Elements", page C-9.

B-6 Using Model References

Model-internal or external references represent a means for navigating between the elements of a model or for structurally interconnecting two models.

References of a model element are

- Use of the element itself or
- Assigned elements (e.g. external objects).

When you create a model with Innovator and add elements, then their structural relationships automatically result in the creation of model-internal references. You can use these to navigate in the model.

If you want to interconnect various models, then you can establish model-external references. Model-external references can be created associatively or generatively. You can also use model-external references for navigation.

Whether and where a model element uses a model reference is displayed in the element's status (see chapter B-1.3.1, "Using Information in the Columns", page B-8).

B-6.1 Model-Internal References

The structured relationships between an Innovator model's elements represent the model-internal references which you can use to navigate in the model.

Precisely one element needs to be selected before you can jump to a reference. If no element is selected in the diagram or table editor, you can jump to the diagram or table's references.

Standard references simplify navigation between elements in the model browser, diagram editor and table editor.

Standard References

Certain model-internal references which are, from experience, frequently used for navigating, are treated and identified by Innovator as standard references for the individual element types.

You can use the shortcut keys [Shift]+[Enter] to quickly jump to this standard reference.

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You can find the same Jump>Standard Reference command in the menu.

Using References in the Model

Model elements which you can directly jump to from an element are shown in Innovator as target elements.

How to proceed

To jump to a target element in the model:

» Select an element in the model browser, diagram or table editors

or

» Select no element in the diagram or table editors.
The selection determines the available model-internal references.

» Select Jump>Reference....
The dialog box of the same name appears.

» If applicable, jump to the tab This Model.
All target elements for the selected element (if applicable, diagram or table) are listed in the table This Model with their respective element type, name and path component.

» Select one or more target elements which you want to jump to.

» If you want to jump to the target element without closing the dialog box, click on [Jump].

» If you want to jump to the target elements and close the dialog box, click on [Jump] and then on [Close] or double-click the selected element (only for single selection).
The dialog box Jump/Reference is closed.
The target elements are opened in their respective editors and all references are selected in this editor.

B-6.2 Model-External References

Use model-external references if you want to display model content from an Innovator model in another. You can e.g. effortlessly transfer information from a business process model to an object-oriented or structured software model with these.

There are individual model-external references between very two different models. The model which contains the model-external references is identified as a local model or also as a source model. The model for whose elements the model-external references should be used as a replacement is identified as a removed model or also as a source model.

The concept of model-external references realized in Innovator enables one model to be referenced to various different models and model types, which can also be located in various repositories, at the same time.

Model-external references are primarily used for:

- Simple transfer or connection of information from business process model in object-oriented or structured software models.
- Reuse of object-oriented components
- Saving data persistency
- Creating views from databases and
- Navigation between models.

Properties of Model-External References

Model-external references have the following properties:

- A model-external reference can represent precisely one removed element.
- In a local model's system, only one single model-external reference can exist as a replacement for a certain element of a removed model. Two different model-external references of a local model (which are in the same system) cannot refer to the same element of a deleted model.
- A local element can have links to various model-external references.
- A model-external reference can have links to various local elements.
- Any elements can essentially be assigned to each other using model-external references. In general however, the mapping types specify which local and removed elements can be assigned to each other.

Multi-Level Assignment Properties

Model-external references have multi-level assignment properties which they use to specify a removed element.

Level 1: Identification using an Innovator element identification (ID)

The referenced element is referenced using a unique element identification in the entire repository. This exists as long as the element is not deleted. The advantage of this referencing is that the referenced element can be renamed or moved and can still be located at any time due to the element identification.

Element identification is unique. Even if an element is deleted an element identification can never be recreated.

Level 2: Identification using the element's identification name (ID name)

The referenced element is identified using a model-unique name. This name normally contains the actual name of the element, as well as the element's position in the package hierarchy; if the element is a relationship, the relationship partner involved is also included.

As a rule, this means that an element that was deleted and recreated under the same name in the same position can be located again. Element retrieval using element identification would not work in this case as the same Innovator element identification would not be created upon recreation of the element.

Level 3: Identification using the element's name (name)

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If an element was deleted and created additionally in another place, you can try to find the element again based on its name only. Finding an element again using element ID or the element's ID name will not work in this case as both the element ID and the ID name are different here. Searching for an element again only using its name as a searching point cannot, however, always be successful; this is because various elements with the same names probably exist in various packages. Many mappings therefore also search the context of the element considered to decide whether an element can correspond to an element being searched for.

Mapping Types and Versioning

The use of model-external references together with mapping types should be explicitly covered.

Although model-external references have various options for identifying a referenced element, a certain sequence of model modification can mean that a model-external reference cannot locate its referenced element.

Note

If referenced elements were imported and then renamed in the referenced model, all (!) offered options fail to find the referenced element as unique again.

The reason: When a versioned element is imported (checked-out), the element could be assigned a new identification number. If the element is then renamed, the element can no longer be located; this is because both the name and the identifying name of the element coupled to it have been changed.

To avoid this, it is imperative that after each versioning import of elements, the action for up-dating the model-external references already available in the mapping types is used in the referenced model. By using this action, the data stored in the model-external references are used to find the referenced element again. Information saved in the model-external reference is also adapted to the referenced element.

Structure of Model-External References

The structure of model-external references is adapted to the requirements of a modular model structure. Splitting a model into individual systems is highlighted here. These systems should be independent from one another and always interchangeable by another subsystem, as long as its interface hasn't been changed. To ensure this it is imperative that each system is self-contained and contains all necessary components.

Systems span through system packages. System packages are packages with stereotypes which have the `systemModel` value. System packages are usually located directly under the main node of a model.

Due to the demand for closed systems, the following properties are defined for model-external references:

- **Exclusive Validity Within a System**
  Model-external references can only have relationships with a system's elements which they are also in, i.e. elements and model-external references from various different systems cannot be linked.
- **Ensuring Integrity**
  If an element which a model-external reference is linked to is moved from the same system to another system, all relationships between the element and the model-external reference are automatically removed.

To be able to recognize which external reference refers to which model-external model, all model-external references are divided below a particular package node. The package node is referred to as a stub package. It can be located anywhere within the system package. The stub package's location is then set using configuration.

Other packages (whose stereotype is not a stub package's stereotype) or model-external references can be located under a stub package. Model-external references can also be located under packages whose stereotype is not a stub stereotype, as long as the packages are transitively located under the stub package.

Creating Model-External References

There are always various steps for creating a model-external reference:

- In the first step, set up the prerequisites for model-external references in the local model by loading the corresponding configuration for target model's model type.
- Then create the respective package structure for the model-external references in the local model using the configuration you loaded.
  The preparations above are necessary for all model types of the desired target model.
- In the next step, select one or more elements and/or their associations in the source model; these should be mapped in other Innovator editions or assigned to existing elements in other editions.
- The procedures differ for an associative or generative mapping.
  For associative mapping, carry out interactive assignment using the menu by selecting the suitable target models element which already exists.
  For generative mapping, element groups are newly created according to the predefined pattern using evaluation script in the target model.

A structure of model-external references is created in the model which should contain the reference to another model. This structure is made up of nodes which serve as the stub for the model's elements which elements should be referenced to.

Elements referenced in this way are called target elements in another model.

Using Model-External References

If a model-external reference was established, you can jump to it.

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How to proceed

To jump to a model-external reference:

» Select an element in the model browser, diagram or table editors

or

» Select no element in the diagram or table editors.
The selection determines the available model-external references.

» Select `Jump>Reference...`.
The dialog box of the same name appears.

» If applicable, jump to the tab `Model References`.
All models which have model references are shown in the tree on the left-hand side.
All target elements for the selected element (if applicable, diagram or table) are shown on the right-hand side in the column `Element type` with their respective element type,.

» Select one or more target elements which you want to jump to.

» Click on `[Jump]` and then `[Close]`.
The dialog box `Jump/Reference` is closed.
The target elements are opened in their respective editors and all references are selected in this editor.

B-7 Exchanging Messages

Innovator contains a communication system which enables users to effortlessly exchange messages from the same and various other repositories. You have access to the various displays in this communication system.

Messages are automatically received. The communication system also offers the option of deleting or saving received messages as desired. You can select and restrict the respective group of recipients when sending them within the selected repository in a targeted manner.

B-7.1 Receiving Messages

If you receive a new message, it is automatically displayed on your screen. However, you can also explicitly check whether you have received a message. You can save or delete messages received as desired. You must remain in the current open Innovator window to view messages.

Viewing Messages Received

You can easily view messages received. If you have received and/or saved more than one message, you can conveniently scroll through these.

How to proceed

To view messages:

» Select `Extras>Communication>Show Messages...`.
The dialog box of the same name opens.
The current message appears in the display field. The status notification area which contains information about the person who sent the message, the recipient and the time it was sent can be seen above this.
Information about the number of current messages and the number of messages which have been received overall can be seen below the text field.
To show previous messages:

» Click on `[Previous]`.
To show the next message:

» Click on `[Next]`.

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Deleting Messages

Messages received are not automatically deleted. They remain in the communication system until they are explicitly deleted.

How to proceed

To delete the current message:

» Click on `[Clear]`.
The message is removed from the communication system.

Note

If you close the communication system, all messages which you haven't deleted using `[Clear]` are saved in the `inomail.dat` file in the `$HOME` directory as long as this was specified during set-up. The messages then appear in the list again when you next start the communication system.

Sending Messages

You will probably want to reply immediately to a message. To send a message, you can jump to the dialog box `Send Message` without having to leave the dialog box `Nachrichten`.

How to proceed

To jump to the dialog box `Send Message`:

» Click on `[Send]`.
The dialog box `Send Message` appears. Read how to work with this dialog box in chapter B-7.2, "Sending Messages", page B-140.
If you want to jump back to the dialog box `Nachrichten`:

» Click on `[Show mail]`.
The dialog box `Nachrichten` appears again.

Innovator Closing Messages

If you leave the dialog box `Nachrichten`, close the communication system at the same time.

» To close the dialog box and the communication system: click on `[Shutdown]`.
The dialog box `Nachrichten` and communication system close.

B-7.2 Sending Messages

You must remain in the current open Innovator window to send messages.

You can only send messages to users in one of the repositories specified by you. You can, however, restrict the number of people who receive the message within the selected repository. You can define the following types of recipient:

- Specific users
- Members of a specific project
- Members of a specific user group
- Users who are currently logged-in in Innovator

Sending Messages

Messages are always sent in the same was in the various Innovator windows.

How to proceed

To send messages:

» Select `Extras>Communication>Send Message...`.
The dialog box `Send Message` appears.

Note

You always need to enter the desired repository, as you cannot send messages to users in different repositories at the same time.

» Enter the name of the repository whose users you want to send a message to in the drop-down list `Repository` or select one from the drop-down list.
Depending on who should receive your message, you need to make further entries to set the group of recipients. Read information about this in the following sections "Sending Messages to all Users in a Repository" and "Specifying and Limiting Recipient Groups".
Once you have made your selection:

» Enter your message text in the text box `Message from <Your User Name>`.

» Click on `[Send]`.
Another dialog box appears which lists your message recipients. These are grouped according to the models which they belong to.

» Confirm the selection with `[OK]` to send the message.
The dialog box containing the recipient list closes when the message is sent. The `[Send]` button is grayed.

Sending Further Messages

To send another message or to send the same message to users in another repository:

» If necessary, click on `[Clear]` if you want to delete all the text in the field.

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» If applicable, enter a new message.

» Specify the recipients again in the drop-down list `Repository` and potentially in the further drop-down lists and proceed as described above to send the message.

Sending Messages to all Users in a Repository

If you don't want to restrict the number of recipients within the repository, you only need to select the corresponding repository in the drop-down list `Repository`. You do not need to enter information in the other fields and drop-down lists.

Specifying and Limiting Recipient Groups

If you don't want to send your message to all users in the selected repository, you can define the recipient group using optional constraints.

Please note that the elements listed in the drop-down lists correspond to permissible values.

Note

If fields are left empty these do not have a restrictive effect.

Specifying a constraint always directly affects the contents of the help lists of the following fields.

As in other Innovator editions, you can also use text samples to limit your selection in the respective fields to a subset of the corresponding help list. You can find out how to work with text samples in the chapter B-3.3, page B-95.

How to proceed

If you want to set the project or model type:

» Select it in the group box `Type`.
You do not want a constraint of this kind to occur.

» Activate the option button `Any` in the group box `Type`.
This restricts the repository's projects in the drop-down list `Model`.

Note

In the drop-down list `Model`, the '*' text sample corresponds to a field being left empty.

So that your message will be sent to users of a specific project/model:

» Enter the appropriate name in the drop-down list `Model` or select the project/model from the drop-down list.

Note

If you enter the '*' text sample in the drop-down list `Group`, the constraint effects all users which are assigned to a group. Leaving the field empty, on the other hand, does not carry out a constraint i.e. the message will also be sent to users which are not assigned to a group.

If your message should be sent to a specific group:

» Enter the appropriate name in the **drop-down list** `Group` or select the group from the drop-down list.

Note

In the drop-down list `User`, the '*' text sample corresponds to a field being left empty.

To select a specific, individual user as recipient:

» Enter the appropriate user in the **drop-down list** `User` or select one from the drop-down list.
If the message should only be sent to the users which are currently logged-in in Innovator, which correspond to the field's conditions:

» Mark the check box `Users logged-in`.

Viewing Messages

You can effortlessly view messages which you received in the meantime or before without leaving the dialog box `Send Message`.

» Click on `[Show mail]` to jump to the dialog box `Nachrichten` and view the messages received.
The dialog box `Nachrichten` appears. Read how to work with this dialog box in chapter B-7.1, "Receiving Messages", page B-139.

Note

If you close the opened dialog box `Nachrichten` in this way, also close the dialog box `Send Message`.

If you want to jump back to the **dialog box** `Send Message`:

» Click on `[Send]`.
The **dialog box** `Send Message` appears again.

Ending the Communication

If you leave the **dialog box** `Send Message`, the communication system closes at the same time.

How to proceed

To close the dialog box and the communication system:

» Click on `[Close]`.
The dialog box and communication system close.

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Index

Symbols
& B-96
* B-95
[ ]* B-96
\ B-95
\(...\) B-96
\1-\9 B-96
^ B-96
§ B-96

A
Access dependency
-Avoiding B-74
Access right B-81
-Granting B-41
Accessing an internal buffer B-96
Adding vs. creating B-22
AND join from query components B-87
Assignment properties B-135
Automatic namespaces B-65

C
Canceling special characters B-95
Changes after creation B-34
Changing
-Column order (model browser) B-9
-Order of entries (model browser) B-10
Changing the Source
-Directed relationship B-44
-Relationship B-45
Changing the target
-Directed relationship B-44
Completeness B-27
Copying
-Model element B-23
Creating
-Diagram B-34
-Element B-33
In the diagram B-39
In the model browser B-38
-Model element B-37
-Refinement diagram B-36
-Relationship B-42
Creating vs. adding B-22
Creation with dialog B-34
Current system model only B-74

D
Default arrangement B-112
Deleting
-Element B-61, B-64
Deleting vs. removing B-23
Deletion control B-62
Dependency
-Between packages B-72
-Import-~ B-72
-Resolve-~ B-73
Detail View B-4
Diagram B-21
-Aligning distances B-110
-Aligning elements B-108
-Copying model element B-23
-Creating B-34
-Default arrangement B-112
-Element in refinement~ Transferring B-36
-Enlarging, downsizing B-100
-Hierarchical ~ B-35
-Minimum font size B-103
-Modifying the display B-100
-Moving elements B-108
-Navigating in the ~ B-104
-Opening B-34
-Overview B-102
-Positioning elements B-107
-Refinement~ creating B-36
-Resolving hierarchy levels B-37
-Selecting elements B-40, B-105
-Showing/hiding margins B-102
-Spacing distance between elements B-112
-Stretching and compressing B-114
-Using the last zoom B-102
-Zooming B-100
-Zooming 100% B-101
-Zooming in to any area B-101
-Zooming step by step B-100
Direction
-Reversing
Of a relationship B-44
Display
-Diagram B-100

E
Element B-20
-Aligning (diagram) B-108
-Aligning distances (diagram) B-110
-Changing B-49
-Creating B-33
In the diagram B-39
In the model browser B-38
-Deleting B-64
-Deleting and removing B-61
-Deleting from the result region B-13
-Identifying the Locking State B-29
-Individual ~ Selecting (standard dialog) B-78
-Locking B-28, B-31
-Moving B-53
-Moving (diagram) B-108
-Positioning (diagram) B-107
-Removing B-63
-Renaming B-49
Complete B-50
Current element B-50
Global B-50
References B-50
-Renaming gen. B-50
-Searching for B-82
-Selecting (diagram) B-40, B-105
-Setting the spacing distance (diagram) B-112
-Transferring in a refinement diagram B-36
-Transferring in the result region B-12
-Unlocking B-32
-Various ~ Selecting (standard dialog) B-78
Element right
-Granting B-41
-Withdrawing B-41
Element type B-20
Expanding
-Namespace B-72

F
Full-qualification
-For subtrees B-68
-Model-wide B-68
Fully-qualified B-68

G
Global namespace B-65
Granting
-Access right B-41
-Element right B-41

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H
Hiding
-Margins B-102
Hierarchical diagram B-35
Hierarchy levels
-Resolving B-37
History B-81, B-83, B-94

I
Import dependency B-72
Info box B-100, B-103, B-114

J
Joker B-95

L
Label B-81
Limiting
-Namespace B-72
Linking
-Relationship B-44
List of model elements B-4
Locking B-28
-Element B-31
-Identifying B-29
-When deleting or removing B-62

M
Maintenance
-Entire model B-25
-Local in diagram B-25
-User-defined B-26
Maintenance status B-24
-Changing B-27
-Types B-25
Minimum font size B-103
Model browser B-21
-Changing the order of columns B-9
-Changing the order of entries B-10
-Columns B-8
-Copying model element B-23
-Finding owning packages B-15
-Navigating in the ~ B-14
-Using information B-6
Model element B-19
-Creating B-37
-Refining B-35
Model tree B-4
Moving elements in another package B-53

N
Name
-Area for unique ~ B-71
-Effect when changes are made B-49
-Rules for ~ B-49
-Uniqueness B-71
Namespace B-64
-Activating/deactivating B-66
-Automatic B-65
-Defining subtree B-72
-Expanding B-72
-Global B-65
-Limiting B-72
-Package-local B-65
Navigating
-In the model B-14
-In the model browser B-14
-To an owning package B-15
Navigation frame B-104
NOT join from query components B-87

O
Only with «access» dependency B-74
Opening
-Diagram B-34
OR join from query components B-87

P
Package B-21, B-81
-Defining as top-level package B-72
-Finding owning ~ B-15
-Searching in ~ B-85
-Selecting
Individual (standard dialog) B-77
Various (standard dialog) B-77
Package-local namespace B-65
Partially-qualified B-68
Path component
-Activating in references B-70
-Fully-qualified and partially-qualified files B-68
-Set length B-73
-Syntax B-67
-Unqualified file B-67
Pop-up menu B-1, B-21

Q
Query component B-92
-Attaching B-87
-Combining B-87
-Correcting B-89
-Formulating B-86
-Jumping to the tab B-89, B-90

R
Reference
-Model reference B-133
-Model-external B-134
-Model-internal B-133
-Standard~ B-133
Refining
-Model element B-35
Regular expression B-95
Relationship B-19
-Changing the Source B-45
-Creating B-42
-Directed ~ B-42
-Hierarchical ~ B-42
-Linking B-44
-Maintenance status B-24
-Reversing the direction B-44
-Same value ~ B-42
-Showing completeness B-27
Removing
-Element B-61, B-63
Removing vs. deleting B-23
Renaming
-Effect on the model structure B-49
-Element B-49
Complete B-50
Current element B-50
Global B-50
References B-50
-Element, general B-50
Repeating search expression B-96
Replacing search template B-96
Resolve dependency B-73
Resolving a refinement diagram B-37
Result region B-5
-Removing elements B-13
-Transfer hits B-90
-Transferring elements in the ~ B-12
Rules for name specification B-49

S
Saving
-Queries B-91
Searching for B-81
-Accessing an internal buffer B-96
-Beginning of the Line B-96
-Combining query components B-87
-Element in standard dialog B-76
-Elements B-82
-Elements in the list of model elements B-13
-Elements in the result region B-13

- End of the line B-96
- General procedure B-83
- Implementing query B-89
- In set package B-85
- Model-wide B-85
- Nodes in the tree B-13
- Query component B-86, B-92
- Set of characters B-95
- Setting the search area B-84
- Starting query B-83
- Storing queries B-91
- Transferring queries to the menu B-91
- With regular expressions B-95
- With text samples B-95
- Within selected elements B-86

Searching throughout the models B-85
Selecting
- Elements in the diagram B-40, B-105
- Elements in the list of model elements B-13
- Elements in the result region B-13
- Nodes in the tree B-13

Showing
- Margins B-102

Standard dialog
- Enlarging visibility area B-74
- Searching for elements B-76
- Selecting entries B-78
- Selecting packages B-77

Standard reference B-133
Storing queries B-91
Subtree
- Defining B-72

T

Table B-21
Text sample B-95
Toolbar B-21
Top-level package B-72
Transferring hits in the result region B-90

U

Uniqueness of names and path components B-71
Unlocking
- Element B-32

Unqualified reference B-67

W

Wildcard B-95
Withdrawing
- Element right B-41

Word-wraps B-55

Z

Zoom
- 100% B-101
- Any area (diagram) B-101
- Diagram B-100
- Overview (diagram) B-102
- Step by step (diagram) B-100
- Using the last (diagram) B-102

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MID GmbH

Headquarters Nuremberg
Eibacher Hauptstrasse 141
90451 Nuremberg
Germany

Tel.: +49 (0)911 96836-22
Fax: +49 (0)911 96836-10

E-Mail: info@mid.de
www.mid.de

Branch Cologne
Ettore-Bugatti-Strasse 6-14
51149 Cologne
Germany

Tel.: +49 (0)2203 20271-0
Fax: +49 (0)2203 20271-10

Branch Stuttgart
Silberburgstrasse 187
70178 Stuttgart
Germany

Tel.: +49 (0)711 633859-0
Fax: +49 (0)711 633859-10

Branch Munich
Keltenring 7
82041 Oberhaching
Germany

Tel.: +49 (0)89 95476831-0
Fax: +49 (0)89 95476831-9